Modelling Interest-Free Economy: A Study In Macroeconomics and Development

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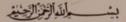
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His forthcoming publications include A Textbook of Islamic Economics: Macro View



In the Name of God, Most Gracious, Most Merciful

Dedicated to my father, mother, wife and children:
CHAUDHRY SARDAR MUHAMMAD JANNAT BIBI
ASMAT GEHAN ANWAR MUHAMMAD WAJEEH ANWAR and
MUHAMMAD SMEE ANWAR

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FOREWORD

Islamizing the field of economics was one of the early undertakings of the founders of the International Institute of Islamic Thought. As part of the Islamic leadership of the student movement of North America, they organized the East Coast MSA (Muslim Student Association) Conference of 1968 for this purpose and published its early pioneering proceedings under the title Contemporary Aspects of Economic Thinking in Islam. This report, published by the American Trust Publications, was well received and remains in demand after several printings. In fact one of the founders of the IIIT, Dr. 'AbdulHamid A. 'AbūSulaymān, published an earlier work in Cairo, Egypt in 1960 on the subject in a pioneering book in Arabic entitled "The Economic Theory of Islam: Its Philosophy and Contemporary Means."

In a subsequent and complimentary development, the establishment of the Association of Muslim social Scientists in 1972 became the first intellectual and professional organization to serve the cause of Islamization of knowledge with special emphasis on the social sciences. It was this concern and vision, al hamdulillah, which later inspired the work of the World Assembly of Muslim Youth, particularly the initiation of its 2nd International Conference, and subsequent international regional and local conferences. These earlier efforts spawned the establishment of many related programs and centers for the Islamization of economies. The IIIT, which was formally established in 1981, serves as a major center to facilitate sincere and serious scholarly efforts towards the Islamization of the human outlook and knowledge. It has developed a program in support of Islamic scholarship and research, held several conferences and seminars on Islamization of knowledge and jointly publishes the American Journal of Islamic Social Sciences with the Association of Muslim Social Scientists.

This book, by Dr. Muhammad Anwar, is one of the first fruits of this ongoing pursuit of the Institute. An associate researcher at the IIIT, he is a young Muslim economist who has shown a devout interest in the cause of Islamization of economics. He is also the first Muslim economist to develop an Islamic model in this field. With his scholarship, intellectual approach and devotion, he offers Muslim economists a new ground-breaking paradigm in the field of Islamic economics which will, in-sha-Allah, invariably lead to more serious studies and research in the field. The IIIT is pleased to be able to present this work upon completion.

It is felt however that there must be more serious works on the Islamizing of the behavioral sciences (psychology, sociology, and anthropology) before the real tools for the Islamization of economics can be effectively fashioned.

In addition to these kinds of direct efforts of Islamization, the IIIT believes that more rigorious works on "Islamic Heritage" are needed to provide greater facilitation and greater accessibility to the verities of the Qur'an and al-Sunnah and the great Muslim works of Islamic heritage. This is extremely important in effecting the Islamization of knowledge and economics. Muslim economists should be able to draw directly and efficiently their hypothesis, understanding of man, and his nature and needs from both the basic sources of Islamic heritage and from Islamized behavioral sciences based on Islamic vision, values and principles. Such undertaking, based on valid Islamic methodology, is necessary to make the effort to Islamize the field of economics, and in fact, all other fields within the social sciences.

The IIIT hopes that greater efforts and cooperation between concerned Muslim institutions of higher learning and research will increase, so that the mission of Islamization will become easier and precious time saved for the *Unnnah* and Islam, *in-sha-Allah*.

International Institute of Islamic Thought Washington, D.C. USA

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PREFACE

Several Muslim economies are interested in a transition from imposed Western practices to fundamental Islamic practices. Recognizing these trends, this study seeks to develop an interest-free general equilibrium model that reflects the intent of Islam in the area of finance.

Economic analysis in the context of an Islamic paradigm is a relatively new area of study. Many economists have demonstrated the relevance, application and feasibility of principles of Islamic economics in their own specialized fields, including comparative economic systems, monetary economics, fiscal economics, microeconomics and macroeconomics.

General equilibrium macroeconomic models are considered essential for evaluating the impact of monetary and fiscal policies in an economy. This aspect has not received the necessary attention from Muslim economists. The present study is a beginning toward developing general equilibrium models of income determination applicable to an Islamic economy characterized by the interest-free Islamic mode of finance.

Only the principle of interest-free finance has been incorporated in the present study. There are other principles of Islamic economics that must be introduced in the models to obtain an Islamic macroeconomic model. Limitation of time and space barred me from undertaking such an ambitious task.

The present study can be used to understand several implications of making a transition from the conventional financial system to an interest-free Islamic financial system. There are numerous countries, Muslim and non-Muslim, that may be inclined to adopt the new interest-free system provided there are sound economic justifications to do so. These countries may utilize the insights gained from this study to rationalize their decisions before introducing an interest-free financial system.

It has been demonstrated in this study that if the interest-based financial system is replaced by the interest-free financial system, the real rates of return for savers and investors in the economy will be preserved during inflationary and deflationary periods. On the other hand, savers are badly hurt in an interest-bearing economy during inflationary periods leading to a financial repression. Therefore it is proposed that the inflation-ridden third world developing countries would be better off if they adopted the interest-free financial system in place of the prevalent interest-bearing system.

The focus of this study is on the theoretical aspects of closed economies

as opposed to empirical analysis. Application of Islamic economic reforms is a very recent phenomenon in Muslim countries. The interest-free economies—Pakistan, Iran and Sudan—have not operated long enough under the new system to produce data necessary for empirical testing. Application of the interest-free models at the international level is very complex and this study does not deal with these issues.

Material on the institutional details of the money and capital markets, operational details of the Islamic financial system, the mechanics of treasury operations and other similar topics is omitted, although several readings on such topics are listed in the bibliography.

This study contains seven chapters. Chapter one explains the development of the institution of interest in the West despite strong moral, social and religious opposition. The institution of interest was exported to other countries by the West, including the Muslim countries. Today most of these countries are searching for ways and means to abandon the Western practices because such practices have multiplied, rather than reduced, their economic problems. Muslim countries in particular, seem anxious to bring about Islamic economic reforms, especially in the area of finance.

In the second chapter, principles of Islamic Economics, interest-free Islamic financial methods, the application of an interest-free Islamic system, and prospects of an interest-free system in the West are reviewed to highlight the importance of this system. It is also stressed that economic theory be modified to be consistent with interest-free practices.

Chapter three outlines the methodology for obtaining a general equilibrium model for interest-free societies. One such model is developed in chapter four. The model is analyzed in chapter five to predict its response to monetary and fiscal policies. Application of the interest-free system for economic development is discussed in chapter six.

Chapters three through six are primarily meant for professional economists and economic planners; consequently the material in those chapters may appear very technical to some readers. Therefore a brief summary, at the end of each of the chapters, is given for the benefit of the general reader.

The final chapter is devoted to a comparison of economic rationalities for the use of interest-bearing and interest-free systems to demonstrate the feasibility of the latter.

ACKNOWLEDGMENT

I am grateful to those who encouraged me to pursue the intimidating task of investigating this topic. I thank God, however, that the task is successfully over. Limitation of space does not permit mention of all those who, directly or indirectly, contributed to the research. Among these was John O. Voll who was, and is very supportive of this special field of inquiry. And without insightful, technical advice from Evangelos O. Simos the effort might have dragged on much longer.

Richard L. Mills made sure that computer and other administrative needs were met expeditiously.

Kenneth J. Rothwell promptly and carefully read several drafts. "A friend in need is a friend indeed," and for me, it was Michael A. Conte, who gave invaluable council and encouragement.

I want to express my deepest appreciation and thanks also to Syed Nawab Haider Naqvi, Director, Pakistan Institute of Development Economics, whose effective advice and assistance put me on the right track. I am greatly indebted likewise to Fahim Khan, Director of Research, International Institute of Islamic Economics, Islamabad, who provided invaluable academic help to keep me aware of current developments in the field and hosted my visit to the International Centre for Research in Islamic Economics, King Abdul Aziz University, Jeddah.

It was, however, the personal interest and sincere efforts of Dr. Abdul Hamid AbuSulayman, Director General of the International Institute of Islamic Thought and his colleagues Dr. Sayyid M. Syeed, Dr. Abdul Sattar, and Dr. Faruq Abdul Haqq, that led to timely publication of this book.

I bow my head and heart in all humility and devotion to Almighty Allah who enabled me to complete this task and ask His forgiveness for all the errors of omission and commission.

Notations

В	value of outstanding bonds						
B	rate of change in bonds						
C	Aggregate real Consumption						
C ₁	change in consumption per unit change in disposable income = ∂ C/ ∂ YD						
C2	change in consumption per unit change in expected real rate of return (or real rate of interest).						
F()	production function						
FN	marginal product of employed labor						
FL	marginal product of hired labor						
K	marginal product of capital						
KK	change in marginal product of capital per unit change in capital stock						
LL	change in marginal product of hired labor per unit change in hired labor						
NN	change in marginal product of employed labor per unit change in labor employed						
KL	change in marginal product of capital per unit change in hired labor						
LK	change in marginal product of hired labor per unit change in capital stock						
Ni	marginal product of labor employed by the ith firm.						
Li	marginal product of labor hired by the ith firm.						
3	real government expenditures						

Н	change in aggregate demand in response to change in the profit-sharing ratio in case of $M+\Phi=0$						
I	real net investment						
ľ	change in real net investment per unit change in the user cost of capital						
i	real rate of interest						
J	change in aggregate demand in response to change in profit-sharing ration case of M + Φ = 0						
K	capital stock in the economy						
ĸ	rate of capital accumulation $= dK / dt = I$						
Ki	capital stock employed by the ith firm						
k	profit-sharing ratio for the financier						
L	hired labor in the economy						
Ľ	change in hired labor in response to change in real wage rate in interest-free economy						
Li	labor hired by the ith firm						
LS	labor supplied in an interest-free economy						
M	stock of money						
M	rate of change in money supply = dM / dt						
$M^{\hbox{\scriptsize D}/p}$	demand for real balances						
N	aggregate labor employed.						
Ni	labor employed by the ith firm						
NS	labor supply in the Classical models						
p	price level						
q	user cost of capital in the Classical models						

	nominal rate of interest
S	aggregate savings
Г	real tax revenues net of transfers
v	market value of equities
VD	demand for equities
w	market wage rate
w/p	real wage rate
w	real wealth
Y	aggregate real output
YD	disposable income
Θ	normal profit rate in the interest-free economy
$\Omega_{\tilde{1}}$	expected profit-share of the ith firm in an interest-free economy, measured in currency units.
7	user cost of capital (= market price of equities) in an interest-free economy
π	anticipated rate of inflation
5	rate of depreciation of capital
Þ	market value of outstanding mudarabas
n _i	economic profits of the ith firm
ŧ	actual profit-share of the ith firm in an interest-free economy.
Notes:	

Notes

Generally, for notations, subscripts refer to partial derivatives and superscripts refer to total differentials. For example L'=dL/d(w/p) represents total change in hired labor per unit change in real wage rate and η_{π} represents partial change in user cost in the interest-free economy per unit change in anticipated inflation.

Chapter One

General Introduction and Background

Traditional macroeconomic models do not apply in economies operating under an interest-free system. The main differences between the conventional system and the interest-free system are explored in section one. The circumstances under which the interest-bearing system emerged in the West and how it was exported to the rest of the world, especially the Muslim countries, are discussed in sections two and three respectively. Why various countries are eager to shun the Western economic models is the subject matter of section four. An Islamic alternative to the Western system is described in section five.

I. Interest-Bearing and Interest-Free Contracts

How does the interest-bearing system work? Suppose an entrepreneur desires to undertake a project that can be started with a capital of \$1,000. The entrepreneur borrows \$1,000 from a financier on January 1, on the condition that the entrepreneur will pay back to the capitalist \$1100 on December 31 of the same year. The entrepreneur is willing to pay the extra \$100 because he expects that the borrowed \$1,000 will make a marginal contribution in his profits of at least \$100. The extra \$100 is called interest. The entrepreneur is liable to pay the agreed interest whether the actual profits are above or below the expected profits. He must pay the predetermined amount of interest even if he incurs a loss. Formally, the foregoing contract is stipulated as follows: persons A and B agree that person A is lending \$1,000 to person B and person B will pay the original amount plus 10% per year of the original amount, which amounts to \$100. The original amount is called the principal and the rate leading to accrual of the interest is termed the interest rate.

If the interest rate agreed upon is "very high," then the interest rate is termed a usurious interest rate and the amount accrued as interest is called usury. Both usury and interest in Arabic are called "riba." Therefore riba, interest, and usury refer to the same thing in this study: the amount of money that borrowers agree to pay to lenders over and above the principal.

An interest-bearing contract can be analysed by reference to the interest, an amount over and above the principal agreed in advance, or the interest rate, a percentage of the principal to be paid by the borrower to the lender per year in addition to the principal agreed at the time the money is borrowed from the lender.

Suppose the same entrepreneur and financier migrate to an interest-free economy and seek an equivalent deal in the interest-free system. Let us assume that the entrepreneur has the same project. He expects the same profits from the project and he desires to obtain \$1,000. The financier desires \$100 over and above the \$1,000 given to the entrepreneur. How will such a deal work in an interest-free economy?

In the interest-free economy, the entrepreneur will obtain \$1,000 from the financier to employ in his business. Both the entrepreneur and the financier look into the profitability of the project. Suppose both parties expect that the project will yield \$250 profit during the year. The financier pays \$1,000 to the entrepreneur and both parties agree to share the profits in a 40:60 ratio among them respectively. At the end of the year, if the actual profits turn out to be the same as the expected profits then the financier will receive \$100 in the form of a profit-share and the entrepreneur will keep the rest, or \$150. Notice that 40% of the actual profits goes to the financier. If the actual profits are more than \$250, the financier will receive more than \$100; if the actual profits are less than \$250, the financier will receive less than \$100. If the business breaks-even, the financier gets no returns. If the business incurs losses, the losses are taken from the capital, the \$1,000 and borne by the financier.

In sum, under the conventional system, the yield for the financier is fixed in advance, irrespective of the actual profitability of the project undertaken with the borrowed money. In the interest-free system, the financier agrees on a ratio in which actual profits of the project will be distributed between the financier and the entrepreneur. Actual yield will depend on the realized profits, which cannot be determined in advance.

II. Emergence of Interest in the West

"Usury," the original name for the modern interest on a fixed return on investment, was present in the natural economies described in the Irish Brehon laws. Almost from the beginning, the taking of usury, i.e. any interest or fixed return, was treated as an offense against morals, because one party bore more risk of loss or less security of making a profit than the other. Several ancient philosophers, including Plato, Aristotle, the two Catos, Cicero, Seneca and Plutarch were against the practice of taking usury. Usury is condemned

and prohibited by scriptures of major religions including the Bible and Qur'an. According to Birnie, the Bible texts referring to usury are Leviticus: 35-37, Exodus: 25, Deuteronomy: 19, Ps.: 5, Ezekiel: 8, and Luke: 35. Major references in the Qur'an are found in Bagara: 275-279, and Al-i-Imran: 130.

This general moral condemnation was reflected in the early civil legislation in the West. In 594 B.C. Solon cancelled all private and public debts when he reformed the Athenian constitution. In 340 B.C., Lex Genucia prohibited the taking of interest in Republican Rome. Julius Caesar, a Democratic politician, merely limited the rate of interest probably to 12%. Justinian lowered this maximum rate to 8% for merchants and manufacturers, 4% for the nobility and 6% for others.

In 4 A.C., when the Roman Empire became Christianized, the Church forbade the taking of interest to the clergy, and in the fifth century to the laity. In the eighth century, Charlemagne made usury a criminal offense. During the early Middle Ages, Popes and Councils continued to fulminate against it, and civil governments passed laws forbidding it. The anti-usury movement may be said to have reached its height in 1311, when Pope Clement V. made the prohibition of usury absolute and declared all secular legislation in its favor null and void. Moneylending in England, became a monopoly of the Jews in the 13th century, and their unpopularity as usurers led to such incidents as the expulsion in 1290 of the whole Jewish community from the country.

Loans, in the Middle Ages, were classified into two types: 'commodatum' and 'mutuum'. Commodatum was loan of an item not destroyed by use. For instance, a horse or a house. Mutuum was loan of an item that is destroyed by use. Example of mutuum are bread, milk, and money. The church treated money as mutuum because it is fungible. Therefore the just price for money was the exact amount of the money advanced. To ask more was like selling a loaf of bread and then charging additionally for the use of it. If it was objected that the element of time was a factor and had to be accounted for, the canonists replied that time was common property, the gift of God, and therefore could bear no charge.

But, the creditors were allowed to receive compensation from defaulted debtors on two grounds: If a debtor failed to pay his loan on the stipulated day, the creditor might suffer loss. In that case the just price of the loan must include some compensation for this loss. This additional payment was called "interest" as opposed to "usury"—that which "is between" (interesse) the present position of the creditor and what it would have been if he had received back the loan at the date fixed.

Interest might also be claimed if the lender lost an opportunity for making profit because the debtor did not return the loan in time. Therefore the creditor could lawfully draw usury in the name of interest, provided he granted the loan gratuitously for a certain period, which might be made very short.

Proponents of the creditors advanced the Theory of Triple Contract which made usury lawful in the name of interest. It was discovered that the kind of loan which the Church condemned—a loan in which the creditor claimed interest from the beginning of the loan and stipulated for the return of his principal, whether the enterprise was successful or not—could be considered a combination of three separate contracts, each of which was lawful if regarded singly, namely: a sleeping partnership, an insurance contract against the loss of the principal, and an insurance contract against fluctuations in the rate of profit. Now, if it was lawful for A to make these three contracts separately with X, Y, and Z, why was it not possible for A to make all three of them with X? This was the theory of Triple Contract that forced the Church to declare usury lawful in the name of interest.

Pope Sixtus V denounced the theory of Triple Contract in 1585 in response to Luther's offensive against the Church's position in his *Tract on Trade and Usury*. Nevertheless the check imposed on usury was only temporary.

Capitalists, or accumulators of liquid capital, desired to add to their riches by putting out their money at interest, and merchants wished to borrow in order to seize opportunities to make monopoly profits. Therefore by the end of the sixteenth century, the movement towards relaxation was in full swing again and the thousand-year period during which interest had been held in check by Christianity came to an end. It was succeeded by a shorter period of about two hundred and fifty years (1600 - 1850), during which interest was permitted, provided it was not excessive, or "usurious". A maximum rate is now fixed by law in most Western countries, under the so-called Usury Laws, to ensure that the interest is not excessive. The same practice has been exported to other countries by the West.

III. Exportation of the Western Practices

During the last third of the nineteenth century, industrial, financial and commercial power concentrated in the hands of giant Western corporations and internal financial empires were being built within all of the major capitalist countries, i.e. those with a high concentration of privately-owned, capitalintensive wealth. There followed a worldwide dominance of capitalist imperialism. The major industrialized capitalist countries brutally and forcefully subdued areas all over the earth for the profits or potential profits of giant corporations. Most of the Muslim states, so dominated, became independent from the West after the World War II. Exploitation of their economies, however, by the West left them in an impoverished state.

Furthermore Western practices sank deeply into the economic life of Muslim societies as a result of the long period of subjugation. Today, institutions created by the West are still alive in the Muslim societies because the class of men brought up and trained in the Western background have become the ruling elite. Western economic practices are notorious for creating maldistribution of income and exploitation of the poor by the rich at the local and international level. Both these factors reinforce the view that the capitalist system should be replaced by a more equitable system.

IV. A Broader Approach to Economic Development

The failure of the traditional approaches to economic development is evident from the mass poverty, co-existence of hunger and affluence, exploitation of the poor by the rich and the powerful, increasing disparities at the regional and international levels, the unsuitability of production and consumption processes to environmental needs, and the irrational use of non-renewable resources. Therefore, several economists have stressed the need for taking account of social, cultural and religious factors in choosing the development paths, rather than adhering to the Western development strategies.

Consequently some inquiries, primarily in economic matters, are evolving step by step into other significant areas of public policy, such as law, government, diplomacy, social sciences, and religion. It is hoped that such interaction will lead to new insights and better modes of thought in the development of public policy.

V. The Revival of an Islamic Development Approach

In common with the other Third World countries, the Muslim world has become increasingly disenchanted with Western development strategies. After three decades of experimentation, it is clear that the attempts to transplant Western models and life styles, and to superimpose them on indigenous cultures in the interests of "development," have not succeeded.

In view of the obvious failure of past development strategies to address the totality of the socio-economic problems confronting developing countries, there is an evolving counter-movement towards the promotion of indigenous development in the Third World. This indigenous movement questions the validity of separating the socio-economic and the cultural spheres. Notwithstanding the arguments of some development theoreticians that there is an inherent incompatibility between certain traditional religious tenets on the one hand and socio-economic progress on the other, it is now being asserted that

development should be rooted in the cultural sources of each people. There can be no separation of socio-economic policy from the socio-cultural context in which it is implemented and from which it should be derived, also as an essential feature of culture, religious thought must be included among the components of development.

It is a widely held view, among 1,000 million Muslims that Islam is a complete code of life that has potential to cope with all possible real life problems of mankind, including social, political and economic. In reality, while Muslim economies were following the Western capitalist system and while some countries also have tried various forms of socialism and nationalism since their independence from the foreign powers, there remains a commitment to make a transition from prevailing paradigms to an Islamic paradigm because none of the systems have delivered the goods to the Muslim societies.

Throughout the Muslim world, efforts to discover and apply Islamic solutions to contemporary problems have been intensified [Voll, 1983; and Moench, 1984, 49-98] and the good and bad in the Western civilization is being weighed, either to be cast aside or reconciled with the Islamic code [MacQueen, 1985, 25]. This present-day trend in the Muslim world is termed 'Islamization'.

Western dominance created a huge gap between human action and the Islamic intent in the Muslim countries. There is a continuous attempt to narrow the gaps in all walks of life. Western dominance, for example, created widespread acceptance of the practice of taking and charging interest in spite of fundamental religious opposition. The focus of this study is limited to Islamization of the financial system and its macroeconomic implications.

Establishment of an Islamic financial system is one of the pioneering efforts needed to reform all economic institutions in accordance with the principles of Islamic Economics. Major principles relevant to this study are described in the next chapter.

Chapter Two

Interest-Free Banking: Progress and Prospects

Muslim countries are reforming their financial systems in the light of Islamic teachings. Islamic financial institutions conduct their operations in ways that steer clear of interest and conform to the *Sharia*, the Islamic code of law and ethics. This chapter begins in section one with principles of Islamic economics. Interest-free modes of operation are described in section two. Section three reviews progress of the interest-free institutions operating among traditional institutions as well as the evolution of interest-free economics. A rationale for development of interest-free economic theory is given in section four. Prospects of interest-free finance in the West are examined in the last section.

I. Principles of Islamic Economics

According to the Islamic teachings, God is the Creator of the universe. People are the vicegerents of God on earth. They must live according to the laws laid down by God, and revealed through Prophet Muhammad, (Peace be upon him). Laws pertaining to the economic activities of the vicegerents are summarized below.

It is imperative that equal opportunity be given to all people, so that they might earn the necessities of life. Individuals may reap diverse material rewards by utilizing their diverse talents and capacities. Inequality in ownership through personal effort, inheritance, and other Islamically approved means is possible. Since private ownership is temporary and real owner of everything is God, however, people must use their acquired resources by adhering to the rules laid down by God, as revealed in the Qur'an and observed in the Tradition of prophet Muhammad, (peace be upon him). In other words, Islam makes wealth a trust from God and its proper use a test of faith. It is absolutely imperative that God-given resources be used to fulfill the essential needs of all human beings and provide them with decent living conditions. Islam does not over-emphasize material incentives, because physical rewards are seen as a means rather than an end in themselves. Muslims entrusted with material

resources have a duty to God to see that they are not abused.

Moderation in personal consumption is encouraged. Savings for personal future needs and the security of one's posterity are obligatory. Wealth in the form of accumulated savings may be used to meet religious obligations such as payment of zakat, a religious levy resulting in a transfer of resources from haves to have-nots. The remaining wealth may be invested in pesonal business activities or by means of a partnership. The partnership could be formed directly between various economic agents or indirectly through the interest-free financial institutions.

Zakat provides a mechanism to prevent undue concentration of wealth and ensure at least the minimum necessary for subsistence to all persons. Investment is encouraged to discourage hoarding and promote economic growth.

It is well known that interest militates against the cardinal principles of Islamic economics. It encourages undue concentration of wealth in a few hands, worsens unemployment, accentuates economic instability, fosters economic injustice and rewards without personal exertion or participation in business risks. In Islam, wealth cannot be channeled into interest-bearing outlets. How the Interest-free institutions operate is described in the next section.

II. Interest-Free Financial Methods

An interest-free Islamic bank in relation to its clients plays the roles of partner, investor, and trader. The interest-free modes of operation designed by Islamic financial institutions satisfy the criteria: "God permits trading and forbids riba." (Baqara 2:275)

Keeping in view the Islamic injunctions against the taking and giving of interest, the Islamic banks have organized their operations on the basis of profit/loss sharing which is permitted in Islam. Islamic banks accept demand deposits and time deposits. Demand deposits are fully repayable on demand and do not get any return. Holders of time deposits are given a share in the profits earned by the bank according to a profit sharing ratio made known in advance.

Interest-free institutions offer a wide range of services, including mudaruba, musharaka, murabaha, bai-muajjal, bai-salam, ijara, ijara wa iqtina, and qard hasanah.

Under mudaraba, one party deposits its capital which the other party uses for trade or investment. If the project is profitable then the profits are shared between both parties in the ratios agreed upon at the beginning of the project. Clients receive funds from the bank and manage operations independently. Contract defines what the client has to do with the money, what he may deduct

as expenses and what percentage of the profits he receives. The client guarantees to return funds only on two conditions: if he is negligent in the use of the funds, or if he breaches the conditions of the mudaraba. In other words, mudaraba is a contract in which all the capital for a particular project or undertaking is provided by the Islamic bank while the business is managed by the other party. Profit is shared in pre-agreed ratios. Loss, if any, unless caused by negligence or violations of the terms of the contract, is borne by the provider of capital.

Musharaka is an active partnership under which the Islamic bank provides funds which mingle with the funds of owners of the business enterprises. All providers of capital are entitled to participate in management but are not necessarily required to do so. Profits are distributed among the partners in pre-agreed ratios, while loss is borne by each partner, strictly in proportion to respective capital contributions. The musharaka is continuous if the partnership lasts as long as the business operates. Under a limited musharaka the client gains ownership over time by agreeing to re-purchase equities over a specified time, usually five years.

Murabaha is a cost-plus contract in which a client wishing to purchase equipment or goods, requests the Islamic bank to purchase the items and sell them to him at cost plus a declared profit. If the client proves that the cost charges are not correct, the deal can be cancelled or he can choose to pay only the cost and force the bank to forfeit its profit.

Bai Muajjal is a trade deal in which the bank agrees to receive the price of a commodity from its client at a future date in lump sum or installments. The agreed price in such a transaction can be the same as the spot price, or higher or lower than the spot price.

Bai Salam is a trade deal in which the client pays the agreed price of a commodity in advance and the commodity is delivered to him by the bank at a specified future date.

An Islamic bank may lease building, equipment or other facility to a client against an agreed rental. The Islamic term for lease is ijara.

Ijara wa Iqtina is a hire-purchase agreement between a bank and its client. The bank agrees to buy and rent a building, equipment or other facility for the client, together with an undertaking from the client to make additional payments in an account. At the end of each year, profits are added to the installments paid until such time as the investment account contains the identical amount the bank paid to purchase the building, equipment or facility. The client becomes owner of the financed equipment and the contract ends.

Qard Hasanah is a loan transaction in which the client obtains x dollars from the bank to be returned at a stipulated future date, free of interest. Some banks may levy a modest service charge based on actual cost of administering such a loan.

Among the foregoing schemes, mudaraba is given the prominent role in interest-free Islamic banking. Before the advent of Islam, during the middle of the fifth century, many bankrupt merchants, along with their families, would voluntarily starve to death rather than seek help from their neighbors. At that time, Hashim, leader of a clan invented mudaraba to provide security to the small merchants. This innovation mobilized merchant capital in Mecca on "an unprecedented scale" [Ibrahim, 1982, 344; and al-Qurtubi, 1967, 204ff.]

Throughout much of the Islamic world, interest-based securities are now being replaced by various profit-sharing interest-free instruments, including Participation Term Certificates, Specific Purpose Mudaraba Certificates, and General Purpose Mudaraba Certificates. Holders of the Participation Term Certificates (PTCs) share in the profits of the business concern issuing such certificates. Specific Purpose Mudaraba Certificates are issued to finance specific projects that mature with the completion of the project. General Purpose Mudaraba Certificates can have a specific or indefinite duration.

III. Application of Interest-Free Banking

Interest-free financial institutions in the form of Islamic commercial banks, Islamic investment companies, Islamic national and international holding companies, takaful (insurance) companies and Islamic development banks have emerged within the past decade in Africa, Asia, Australia, the Caribbean Region, Europe, the Far East, the Middle East, North America and Oceania. Interest-free institutions are successfully competing with the traditional interestbearing institutions in several countries. The countries where interest-free Islamic institutions are operating include Australia, the Bahamas, Bahrain, Bangladesh, Benin, the Cayman Islands, the Peoples Republic of China, Denmark, Egypt, Gabon, Guinea, Holland, India, Iran, Iraq, Italy, Jordan, Kuwait, Liberia, Luxembourg, Malaysia, Mauritius, Niger, Pakistan, Philippine, Qatar, Saudi Arabia, Senegal, Singapore, South Africa, the Sudan, Switzerland, Tanzania, Thailand, Tunisia, the Turkish Republic of North Cyprus, Turkey, Upper Volta, the United Arab Emirates, the United Kingdom, the United States, West Germany, and Zimbawe. Among these Pakistan, Iran, and the Sudan have declared the adoption of a complete interest-free system.

Some of the interest-free Islamic financial institutions are very modest in size, others are larger, and still others are giants. For example, Falah Investment Limited, and Baitun Nasr are operating with a capital of \$50 thousand, an \$0.2 million respectively. The capital of Al-Baraka Tunisia Finance House, Islamic Banking System International, and International Islamic Bank of Denmark is \$50 million, \$130 million and \$500 million respectively. Dar al-Mal al-Islami, Al-Baraka, and Al-Rajhi financial networks have capital

respectively of one billion, five billion and seven billion dollars.

By employing funds in ways that avoid interest and by performing most of the general banking services, the Islamic banks have established the practicality and viability of Islamic banking in the modern world. Much of this has been done by private initiatives, and these have inspired some interest at state level as well.

Several Islamic countries have undertaken steps toward the introduction of interest-free Islamic banking on an evolutionary basis. Special legislation has been introduced in the Sudan, Malaysia, Pakistan, Turkey, the United Arab Emirates and Iran to facilitate operations of Islamic financial institutions on a national scale.

Iran, Pakistan and the Sudan have made official commitments to replace conventional banking completely by Islamic banking. In Egypt, public pressure for a complete interest-free system is on the rise. The application of interest-free banking in Pakistan, Iran, the Sudan and Egypt is reviewed in this book to discover the trends and illuminate the prospects of complete interest-free banking in the Islamic world. Prospects of interest-free banking in the West will be evaluated later in this chapter.

Pakistan was created in the name of Islam in 1947. The need for ordering economic life according to Islamic teachings was publicly voiced as early as the first year of the country's independence. The late Zahid Hussain, the first governor of the State Bank of Pakistan announced in his opening statement on July 1, 1948 his intentions to reform the banking practices along Islamic lines. Establishment of a research organization in the State Bank of Pakistan was intended to devote special attention to discover ways and means for abolishing interest in the banking industry because interest is repugnant to Islam. Again, in April 1949, he repeated that elimination of interest was of vital importance. In 1952 he declared that people had the right to ask about the steps taken toward the elimination of interest because this is one of the most important injunctions of Islam. In 1959, the State Bank of Pakistan set up an Islamic Economic Section within the Research Department of the Bank to carry out organized research work in the field.

Several scholars, including M.N. Siddiqi and Muhammad Uzair, proposed the organization of Islamic banking on the basis of mudaraba during the 1950s. Authorities, however, did not take serious steps to implement interestfree banking.

The issue was revived in 1973 during the preparation of the Constitution of Pakistan. It was enjoined upon the state to "eliminate riba as early as possible." In February 1979, the president of Pakistan made a commitment to abolish interest within a period of three years.

The President of Pakistan asked the Council of Islamic Ideology, a legislative body, to prepare a blueprint for the purpose. The Council, in turn, appointed a Panel of economists and bankers to prepare a report on the elimination of interest. Beginning in 1979, the government of Pakistan took partial action in the field of interest-free banking when the operations of the Investment Corporation of Pakistan, the National Investment Trust, and the House Building Finance Corporation were remodeled along Islamic lines.

Beginning in January 1981, interest-free counters were opened in all 6,600 branches of the five nationalized banks. It was declared that the deposits of the interest-free accounts would not be used in interest-bearing operations. The response of the depositors could be judged from the fact that the deposits rose from Rs. 973 million on January 29, 1981 to Rs. 6489 million by December 30, 1981. The interest-free deposits increased further to Rs. 12, 863.4 million by end of December 1982 and to Rs. 19,910.7 million by end-December 1983 [Sved Reza, 28 April 1984, 33]. The total deposits of the five nationalized banks, which have been growing at the rate of about Rs. 3000 million every six months, stood at Rs. 22,000 million on June 30, 1984. Added to other non-interest bearing deposits held in current and other contingency accounts, this formed a very substantial percentage of total bank deposits-nearly 40 per cent. In July, 1984, Finance Minister, Gulam Ishaque Khan, announced a schedule to abolish interest and make a complete transition to Islamic banking as of July 1, 1985. The government declared that none of the financial institutions would be allowed to operate on the basis of interest in Pakistan, including all foreign banks. Apparently more than a dozen foreign banks welcomed the decision to Islamize the financial system and agreed to co-operate in this respect [Wall Street Journal, 18 June 1984, 27]. The Hongkong and Shanghai Bank became the first international institution to offer Islamic services in Pakistan as of July 10, 1984 [Haggani, 23 August 1984, 50].

Following this schedule, interest was eliminated from all finances provided by a bank to the federal and provincial governments, to public sector corporations and to public and private joint stock companies as of January 1, 1985. On April 1, 1985, all financial transactions with all entities, including individuals, began on an interest-free basis. On July 1, 1985, all commercial banking in rupees became interest-free. No bank in Pakistan, including foreign banks, is now allowed to accept any interest-bearing deposits.

During the early 1980's, several countries of the world followed the development of interest-free or "profit-loss sharing," banking parallel to traditional banking in Pakistan with great care and interest. When it became clear that the interest-free system is viable, and a desirable option, the Sudan and Iran quickly announced the adoption of the system.

The president of the Sudan, Nimeiri, announced by decree the beginning of an Islamization process in mid-1982. It was declared that the Sudan intended to adopt a complete interest-free financial system. Existing banks were asked to assist in the transition from interest-bearing banking to the interest-

free Islamic banking. In December, 1984, the government of the Sudan "ordered all banks operating in the country to stop paying or charging interest." [Wall Street Journal, 12 December 1984, 39] A decree was issued to make interest payments unenforceable in Sudanese law courts. The decision affected 27 banks, including nine foreign banks.

Interest-free banking in the Sudan had actually started with the inception of an Islamically oriented bank in 1978, the Faisal Islamic Bank of the Sudan. The success and viability of this bank paved the way for the establishment of several other interest-free banks, including El Tadamon Islamic Bank, the Sudanese Islamic Bank, the Baraka Islamic Bank, the Islamic Bank for the Western Sudan, the Islamic Cooperative Bank for Development and recently the Islamic Bank of the North. In less than five years of operation, Islamic banks in the Sudan not only proved to be effective, but has taken a large share of the banking market. Their total "paid-up" capital increased to 168 million Sudanese pounds compared to 158 million for the fifteen non-Islamic banks.

In Iran, the parliament approved comprehensive legislation in August, 1983, to eliminate interest from the operations of commercial banks as well as the Central Bank of the country. The Governor of the Central Bank of Iran announced a switch to an interest-free system on March 23, 1984 [Hong Kong Muslim Herald, April 1984] and issued rules and regulations under which all banking operations would be based on Islamic contracts and transactions without interest being paid or received [Echo of Islam, July/August 1984, 27].

In Egypt, the experiment of interest-free banking began in 1963 in Mit Ghamr, an Egyptian city in the Nile Delta. Its purpose was to explore the possibilities of mobilizing local savings and credit in a rural society and begin industrialization of the Egyptian villages without state interference.

By all standard criteria, such as increase in average size of deposits, increase in number of banks, increase in bank assets and profits, increase in requests for more banks, and other like measures, the project was extremely successful. In 1967 eight new banks and four more branches were added to Mit Ghamr Bank. Eight new interest-free banks were opened in eight other provinces in Egypt. The number of savings depositors in all banks increased from none in 1963 to 357, 637 in 1967. Total deposits in all accounts increased from none in 1963 to 956,538 Egyptian pounds in 1967.

Paradoxically this success created problems for the Egyptian Banking industry. The spread of Islamic banks represented a major, long-run threat to the existing traditional banking system. Though existing social authorities initially saw the Islamic banks as institutions conforming to the narrow traditional concept of banking, when the banks started to operate, they saw them as interfering in their own area of authority. The interest-free banks were then closed by the government because their functions and role appeared to conflict with existing institutions such as the social authorities, the commercial

banks, and some of the central holding organizations—industrial and commerical—which were mainly under government control. Another interest-free bank, however, the Nasser Social Bank, was later founded on the instructions of Anwar Sadat, the late Egyptian president, in 1971. The Mit Ghamr experiment provided an excellent working example on which the infrasturcture of interest-free banking could be built.

Cairo also has a very successful private bank, the Faisal Islamic Bank of Egypt. Since its opening in 1977, the bank, with 12 branches and 15 more under construction, has become one of the largest banks in Egypt. It has 1.2 million pounds in accounts, compared to 300,000 for the next largest bank, and the 30-40,000 account average for Egyptian banks. At least two other Islamic banks are now being set up, and companies based on Islamic principles are flourishing. One such company, al-Sharif Plastic, set up some years ago, is now one of the largest.

Many Muslims view Islamic banking as a practical embodiment of Islamic economic principles and ideals. They flocked to enlist as clients of the interest-free banks. Their attitude forced the conventional banks to open "Islamic Dealing Branches." The banks claim that the financial status of the Islamic Dealing Branches is fully independent of the main banks.

The Egyptian people voted, in a May 1980 referendum, for an Islamic system in Egypt. As a result, cases against payment of interest are appearing in courts and public pressure for a complete interest-free financial system is reportedly on the rise.

In Pakistan and Iran, the transformation from traditional banking to Islamic banking on an economy-wide scale has been accompanied without any major problems. The range of banking services offered by the commerical banks has not been adversely affected. New ways of providing medium and long term finance through new financial instruments like Participation Term Certificates have taken firm root in Pakistan. The central banks of both Pakistan and Iran have maintained their effectiveness in supervising and regulating the actions of the commercial banks in the new milieu, characterized by the adoption of Islamic financing practices.

Furthermore, to replace the Bank Rate Mechanism, central banks in both Pakistan and Iran have been empowered to regulate the profit-sharing ratios as a means to influence the overall aggregate demand in the economy as well as sectoral financial flows in order to achieve the desired monetary policy objectives. The main purpose of this study is to develop a macroeconomic model that explains the effects on various economic sectors of varying profit-sharing ratios rather than interest rates.

As of January, 1986, forty-six countries were members of the Organization of the Islamic Conference. All member states pledge to Islamize economic, financial and banking activities in their countries. Elimination of riba and the creation of Islamic financial and economic institutions are among the objectives of the Organization of the Islamic Conference. As reported above, so far three countries, Iran, Pakistan and the Sudan, have opted for a complete interest-free financial system, while other Muslim countries are watching their experience before making a switch to a complete interest-free system.

Several scholars have demonstrated the theoretical superiority of the Islamic economic system, while its practical viability is evident from the successful working of the interest-free system. In addition, the mounting public pressure in several Muslim countries in favor of Islamization, will, sooner or later, force the authorities to replace the present systems by an Islamic economic system.

In terms of the overall economy or of economic policy, there exist, on the one hand, the strategic question of whether and how the prohibition of interest should be executed, and, on the other hand, the theoretical problem of the efficient and smooth working of an interest-free economy and its general ability to function.

The various economies of the Muslim world are at different levels of economic development. Countries such as Bangladesh, Afghanistan and Guinea are seriously underdeveloped. Other economies such as those of Egypt, Syria and Pakistan are relatively more highly developed. The major problem in such countries is massive unemployment.

On the other hand, there are countries such as Kuwait, Saudi Arabia and the Gulf States that are among the richest nations of the world. These contrasting levels are reflected in the fact that in 1982, per capita income varied from \$105 in Chad, \$123 in Bangladesh, \$198 in Mali to \$12, 438 in Kuwait, \$31,429 in Qatar and \$37,551 in the United Arab Emirates. Most of the Muslim economies are facing double-digit inflation ranging from 11.7 percent in Senegal to 69.7 percent in Sierra Leone.

There is no doubt that full employment and price stability are among the major economic goals of all the Muslim countries leaning towards economywide interest-free reforms. An immediate goal for some countries is to cure inflation, while others may prefer improving the employment situation first in such situations, a versatile and complete general equilibrium model that allows authorities to tailor their monetary and fiscal policies according to their own specific objectives is highly desirable.

Today's Muslim economies are a variant of the Western interest-bearing economic system. In order to shape the demand of the people, the governments need an economic framework consistent with the principles of Islam and clearly understood by contemporary policy makers.

Prohibition of interest makes the envisaged Islamic economic system structurally different from the Western economic system. Consequently interest-based economic models are not applicable in the interest-free economies without undergoing proper adjustments. Economic tools that allow analysis of economic policies under the interest-free financial system are absolutely necessary. Some of the tools need to be developed from scratch and others may be obtained by properly modifying the traditional models applied in the West.

In order to achieve a satisfactory performance in any economy it is necessary to co-ordinate monetary, fiscal and income policies. The general equilibrium models provide a structural framework that can be used to understand the mechanism and linkages through which both monetary and fiscal policies are likely to produce their effects on economic aggregates in the economics. One such general equilibrium model is developed in chapter four and changes in income, employment, price level, and profit-sharing ratio, in response to changes in the money supply, taxation, and government spending are worked out in chapter 5. The methodology used to develop the general equilibrium model is described in the next chapter.

V. Prospects of Interest-Free Banking in the West

Echoes in favor of interest-free banking are coming from religious as well as secular circles in the West, Religious proposals appeal on the basis of similarity in the fundamental economic teachings of Islam, Judaism and Christianity. Secular recommendations are based on soundness of interest-free banking, and anticipation of crisis in the conventional banking system.

No doubt interest is a source of increasing problems for governments, consumers, corporations, real estate owners, farmers, and banks alike in the United States. The debt situation of each of the categories in the United States is reviewed and opinions of contemporary Western scholars are presented here to reflect their confidence in the soundness, and viability of interest-free banking and in its prospects in the West.

Public debt in the United States was \$312 billion during the Johnson administration, \$344 billion during the Nixon administration, \$619 during the Carter administration, \$1 trillion for Reagan's administration through 1981 and \$2 trillion by 1986. Officials acknowledge that the major problem is not

the debt but the interest. The interest has to be paid from the tax revenues. The interest for 1986 was \$196 billion and is estimated at \$207 billion for 1987. Outrageous deficit financing has forced the legislature to do something about the federal deficits and adopt a balanced budget. Curing the budget deficit problem, however, is likely to send interest rates higher. Higher interest rates spell further troubles for consumers, corporations, and banks in the United States and for several debt-financed, third-world countries.

The huge federal deficits of today, and probably in the future, and the pressures of U.S. government policies to reduce unemployment, keep alive the specter of a renewed surge of inflation before long, and ultimately a move toward higher interest rates. The higher interest rates, in turn, will prolong the aversion of banks, insurance companies, and other capital investors for straight, long-term, fixed-rate bonds and mortgages. Obviously the government, the insurance companies, and the large corporate borrowers will be in great need for long term capital. At the same time, some Islamic countries may have large growing surpluses for the rest of the century. Therefore operation of Islamic economics could well pose serious prolonged short as well as long term consequences for Western financial institutions at a time when the West can ill afford to assume unnecessary risks. The influence of the philosophy and operation of Islamic economics will increasingly affect acceptable approaches to Islamic money management.

Today, much of the petro-dollar funds are recycled into Western financial institutions with little more concern than considerations of safety and security. In the future this approach may change, and the Western institutions may have to agree on Islamically approved financing methods to utilize those funds. The potential sums that could be taken out of the Western conventional institutions and decentralized into new third world conduits cannot go unnoticed.

The difficult debt situation in Third World countries is steadily forcing leaders to realize that their future growth cannot be financed as much by debt as in the past. The practical alternatives are increased internal savings and private investment. The developing countries are facing tremendous difficulties in servicing their debt, i.e. paying interest on loans. Eleven Latin American countries met in Urugus during March 1986 to discuss ways of trimming the interest bills on their \$350 billion debt. The proposals to cut the interest bills include a cap on the rate of interest, "interest forgiveness," and limiting debt-service payments to a fixed percentage of export earnings. Two countries have already unilaterally imposed such a ceiling: Peru at 10 percent and Nigeria at 30 percent of their exports.

Rising interest rates spell danger to the Western banking system. Higher interest rates could boost charges on most foreign loans. Economic forecasters at Data Resources, Inc., in Lexington, Massachusetts assert that a hike of

1 or 2 percentage points in the international prime rate greatly increases the pressures for a moratorium or an outright default by a debtor country—an event that would mean steep losses for banks involved.

American consumer debt is \$112 billion through credit cards, \$200 billion on auto loans, \$26 billion on home loans and \$184 billion on others. According to an ABC report in early 1986, 98.2 percent of American consumers have a hard time in making payments. They have been conditioned to buy in advance and pay later. They pay bills of one credit card through other cards and so on.

Corporations are in heavy debt not for investing but for take-overs. The Chairman of the Securities and Exchange Commission worried that "a recession or rise of interest rates will cause these companies to go into bankruptcy." This is another sign of the bleak future of conventional banking.

Mortgage debt amounts to \$1.4 billion in the United States. People have trouble keeping their homes or buying new ones because they have already borrowed too much and they must meet the requirement that no more than 28 percent of their income should be enough to cover the installment payment on the loan obtained for homes. It is argued by analysts that in the past decade, people borrowed too much when inflation was soaring. Now inflation is down, prices of houses are down, and interest payments are down which is contributing to bank failures.

Delinquency notices were issued to 70,000 farmers in North Dakota, Minnesota and Iowa to start the process of foreclosure in late 1985.

According to the U.S. News and World Report, July 9, 1984, banks were then and are now failing at a record post-Depression rate for the first time since the Depression of the 1930s. The number of troubled institutions on the "problem" list monitored by the Federal Deposit Insurance Corporation, the agency that guarantees savings and checking deposits up to \$100,000, soared from 217 in 1980 to 700 in 1984.

Again, on May 27, 1985 the U.S. News and World Report stated that consumers, business executives, and bankers are becoming increasingly uneasy about cracks in the nation's financial system. State and federal regulators closed 79 banks in 1984. Of the nation's 14,800 federally insured banks, 947—one out of sixteen—was on the "problem" list. Scores of Savings and Loan institutions were near insolvency. Indeed, more than twenty-one rural banks were sucked under this farm depression.

Even the largest banks, supposed symbols of financial safety and sound judgment, were hit. To prevent a national banking crisis, the Federal Deposit Insurance Company engineered a \$4.5 billion rescue operation, taking temporary control of the Continental Illinois Bank's management. Seattle-First Bank also ran into trouble and wound up being sold to the Bank of America. But the Public Broadcasting Service, on January 22, 1986 reported that the

Bank of America is "Seeing Red" itself. Bank of America, the second largest bank, reported \$1.6 billion loan losses in agriculture, shipping and real estate. Mr. Stephen Mclim of the Bank of America said that "farmers have suffered more than the bank has," reflecting the pains inflicted by the practice of interest on the lenders and the borrowers alike.

It is felt in both religious and secular circles that it is perhaps time to revise the public attitude on the question of interest in a drastic fashion. For instance, Malise Ruthven, concludes that Islamic banking "is likely to be taken increasingly seriously as the conventional world banking system falls further into disarray or collapses completely" [1984, 360].

The Reaper, March 1, 1984 maintains that "the conservative economics of Hebrews, Muslims and Christians is identical... Unity between Jews, Muslims and Christians in the area of peaceful economics," can be achieved by replacing the "parasitic, elitist and dying Western debt capitalism."

Hugh Montefiore, bishop of Birmingham and chairman of the Church of England's Board of Social Responsibility, recently reminded via the Banking World that "There are grave moral objections to some modern loans and interest. The early fathers took the Old Testament veto on interest very seriously, as did Muslims from the Qur'an. Individuals inveighed against it. Councils forbade it to clergy. Canon law of the Middle Ages absolutely prohibitied all lending on interest, the only exceptions being the Jews.

"Among the Jews, interest was only permitted when dealing with Gentiles. To a foreigner you may lend at interest but to your brother you shall not." (Deut 23.19) [Crew, 1985, 75].

Ann Elizabeth Mayer curiously wrote in the Wharton Magazine that "contemporary Muslims have been sharply critical of Christians in the West for their secularism and materialism, and the proponents of Islamic economics have lambasted Westerners for failing to abide by the prohibition of interest that is common to both religious traditions. Will galloping inflation and skyhigh interest rates provoke a reversion to the Christian economic tenets that have been abandoned for centuries? Will there be a rapprochement between Christians and Muslims on the basis of common economic ideology?"

Ocwieja replied in the same journal that "A reapproachment in the characteristics of the banking industry in the Muslim and Christian worlds is coming about, not as a result of a common aversion to perceived iniquities of paying or receiving interest, but in response to the demands of the market."

Richard London, after analyzing the American banking system, concludes that "Americans, crushed under the heel of high interest rates and sky-rocketing inflation...can take a lesson from the people of Islam and the banking system they have created." [1985, 23]

Rodney Wilson [1984] concluded that "although the principles under which Islamic banks operate differ considerably from those which determine Western banking practices, they are nevertheless sound," and recommended that "indeed it may well be that by studying the working of the new Islamic institutions, Western financial specialist can gain a greater insight into the defects and merits of their own institutions." [1984, 126]

The American Banker reported that Islamic banking is attracting considerable attention in the world's money centers. More than 100 bankers, including representatives from such august institutions as the Bank of America, Citicorp, and American Express have turned up to hear lectures about concepts such as musharaka, mudaraba and takaful.

Chapter Three

Research Methodology

A representative model of the Western system is selected as a basis for developing a comparative analysis. Macroeconomic models usually show how various sectors of an economy are linked together so that effects of changes in various variables on the rest of the variables and sectors, due to changes in policies or otherwise, are traceable.

The Islamic principle of prohibition of interest is incorporated into the selected model to develop a general macroeconomic system applicable for those economies in which an interest-free financial system is prevalent, such as in Iran, Pakistan, and Sudan.

Literature on macroeconomic theory contains a large variety of plausible models. Each model exhibits quite different responses to the same policy experiments. Sargent, rightly avows that "the economics profession has not yet attached itself to a unified treatment of a single, widely received macroeconomic theory". [1979, xiii] Lack of a universal model means that a prototype model representative of the Western economic system must be selected and adjusted into a model that suits the economies characterized by the institution of interest-free financing.

Thomas Sargent's "Classical" model [1979, 6-19] seems most appropriate for the objectives of this study. He synthesized major Classical beliefs with some Keynesian assumptions regarding saving and investment behavior of economic agents in an economy. Incorporation of the Keynesian assumptions into the Classical models makes the models relatively more realistic, compared to most of the traditional models in vogue. As the model reflects the contemporary thinking in the economics profession, many researchers have extensively employed Sargent's models to analyze macroeconomic behavior. Hence this "Classical"model enjoys wide respect in the profession.

Sargent's approach begins with the behavior of individual agents at the micro level that is translated into macroeconomic relations. Individual economic agents, firms and households, dealing on the basis of interest have implications for the economy as a whole. It is absolutely important that the interest-based transactions be replaced by interest-free transactions at the micro level

and its consequences be ascertained for the economy as a whole. The linkage between the micro foundations and the macro models drawn by Sargent makes it possible to achieve our objectives of obtaining interest-free macroeconomic models after making behavioral changes at the micro level. Linkage between the micro and macro behavior for investment demand, demand for money and labor supply, however, are not treated well. The relevant gaps are filled in at the appropriate places in chapter four of this work.

According to Keynes, the primary determinant of saving is the disposable income. Classical economists believe that the interest rate is the major determinant of saving and investment. The Classical position is intolerable to Muslim economists although the Keynesian assumption, incorporated by Sargent into the Classical models, is acceptable. At the same time some Classical assumptions such as a balanced government budget, motives for holding money, and perfectly competitive markets are relatively closer to Islamic thought.

Thus the choice of the Sargent model has been dictated by the considerations of tractability, level of sophistication, usefulness of the model for empirical research, realism of assumptions, relevance of some of the behavioral assumptions for Islamic economies and contemporary thinking in the economics profession.

The Classical model is composed of three sectors: firms, households and the government. The firms are endowed with a fixed amount of capital stock. All firms share a common production function to produce a single good. Output can be varied by varying employment of labor which is dictated by the motive of maximizing economic profits. Households supply labor, choose a saving rate, and decide how to hold their wealth among money, bonds, and equities. The government issues money, trades bonds in the open market, collects taxes and buys goods and services from the commodity market. The Classical model is outlined below.

Output is assumed to be distributed among consumption, net investment, capital depreciation, and government spending. Assuming a fixed technology, firms are allowed to produce output using capital and labor. The capital stock is fixed for each firm so that firms can vary output by varying employment of labor. The labor demand curve faced by a typical profit-maximizing firm is derived. The labor demand function and the production function faced by the typical firm are translated into market labor demand function and economywide production function by exploiting the Euler theorem and linear homogeneity of the production function faced by the individual firms. The behavior of firms is completed with the description of the investment demand as a function of the gap between the marginal product of capital and the user cost of capital, relative to the anticipated real rate of interest.

It is demonstrated that demand for money depends on the nominal rate of interest and real income, provided equities and bonds are perfect substitutes, and all changes in household wealth are held in the form of equities and bonds. Households' consumption is understood to depend on the disposable income and the anticipated real rate of interest. Although the definition of disposable income is more realistic, the micro considerations behind the consumption decisions regarding maximization of utility are ignored. Labor supply is assumed to be directly related to the real wage rate. Again, utility maximization considerations behind the labor supply decisions of the households are ignored, furthermore, no mention is made of the fact that a positive relationship between labor supply and the real wage rate holds—because the substitution effect is assumed to dominate the income effect in response to variations in the real wage rate.

Government spending is composed of tax revenues, and rates of growth in real balances and real value of outstanding bonds.

The model is summed up in seven equations which determine seven endogenous variables: labor employment, real wage rate, rate of real output, real consumption demand, real investment demand, nominal rate of interest, and price level. The values of the endogenous variables may undergo changes in response to changes in the exogenous variables: tax revenues, government spending, rate of capital depreciation, stock of money, anticipated rate of inflation, and additional parameters that determine the shapes of the underlying functions.

The foregoing model is modified to obtain models that are applicable in an interest-free economy. It is understood that Islamic economics provides no basis for rejecting those Western tools of conventional analysis that are really neutral or value free. Care must be exercised, however, to ensure that apparently value free analytical tools, such as the IS-LM framework in which the interest rate plays a crucial role, are really neutral. [Ariff, 1982, 3]

We intend to complete quite a few tasks in this study. First the desired interest-free model is obtained by adjusting the Classical model into an interest-free macroeconomic model in chapter four. The impact of fiscal and monetary policies is analyzed in chapter five and the implications of interest-free finance for economic development through financial deepening, in an inflationary environment, are given in chapter six. The methodology of research used for each task is outlined below:

I. Developing Interest-Free Models

First, to be consistent with the principles of interest-free financing, the factors of production are reinterpreted and returns to the factors of production are evaluated accordingly. This step leads to modification of the equations representing labor demand function, labor market equilibrium condi-

tion, production function, consumption function, investment function and goods market equilibrium condition.

Second, the labor demand function faced by individual firms in the Classical model is derived on the basis of profit maximization behavior of the firms. Firms deduct the wage bill and the user cost of capital from their gross revenues to obtain their profits. The wage rate and the interest cost are predetermined for the firms and, as such, indicate that the claims of the labor and capital must be satisfied irrespective of the profitability of the projects undertaken by the firm. In the interest-free scheme, the hired labor is rewarded in the same way as labor in the Classical model. But capital and the entrepreneural labor is rewarded only if the business venture in which the capital was employed yields Islamic profits. Islamic profits are obtained by deducting all the expenses from the gross revenues except the profit-share of the capital owner(s). The accrued Islamic profits are shared between the entrepreneurs and the external financiers in a pre-determined profit-sharing ratio. The foregoing scenario suggests that the interest cost of capital in the Classical model must be replaced by the expected profit-share of the capital owner in the interest-free economy. So the Classical assumption of profit maximization is replaced by an equivalent assumption that the firms in an interest-free economy strive to maximize their own share out of the accrued Islamic profits.

These steps involve modification of the consumption function, investment function, goods market equilibrium, and money market equilibrium.

It is worth noting that when a firm, in interest-free economies strives to maximize its own profit-share, it simultaneously ends up maximizing the profit-share of the financier as well. Hence the spirit of cooperation is part and parcel of interest-free financial contracts.

The model obtained after modifying the Classical model is named an interest-free macroeconomic model. As such, this model is applicable in the economies that have opted for the interest-free financial system such as Iran, Pakistan, and Sudan.

II. Analysis of the Interest-Free Models

The modified model is linearized and responses to various monetary and fiscal shocks in an interest-free economy, including changes in the money supply, taxation, government expenditures and anticipated inflation, are ascertained under two alternative scenarios regarding the role of money in determining values of the real variables in the model.

Next the conditions for stability, neutrality and dichotomy of the interestfree models are examined. These tasks are achieved in chapter five.

III. Application of Interest-Free Financing

Development economists, especially those in the International Monetary Fund are concerned about the economic stagnation in the lagging developing countries of the Third World. The major cause for economic stagnation lies in the deterioration of the real rates of return to the savers in an inflationary environment. It is argued that inflation be put under control to increase real rates of return to savers in the developing countries in order to help them grow.

The relationship between the real rates of return to the savers and the development process is presented and the implications of interest-free finance during inflation are analyzed in chapter six. It is demonstrated that the savers and the investors retain their desired real rates of return in the event of inflation and deflation provided the financial contracts are based on interest-free principles. Savers are not hurt nor can investors draw undue advantages by inflation in an interest-free economy.

The incentive to save is maintained during inflation in an interest-free system, because the real rates of return on financial assets are preserved. The lagging economies concerned with inflation and the ensuing financial recession therefore would be better off if they made a switch from the interest-bearing to the interest-free financial system.

IV. Summary

This chapter described the mechanics for obtaining an interest-free macroeconomic model from a prototype western model. The approach is useful for pinning down the similarities and differences between the Western and the Islamic economic systems. Most of the Muslim countries interested in adopting an Islamic system are now working under the Western system. This is another reason for converting a Western model into an interest-free model. This conversion allows policy-makers to gain useful insights in the process of transition from the Western system to the Islamic system. Application of Western scientific tools of analysis is accepted in Islam as long as they are free of anti-Islamic elements.

Economists have not presented a universally accepted macroeconomic theory. There are several macroeconomic models that provide very different answers to the same policy questions. Most of the models are grouped under Classical models or Keynesian models. Sargent's Classical model is selected from the literature to represent the Western system. Sargent incorporates important Keynesian views into a Classical model. Specifically, he adopts the Keynesian approach to savings and investment behavior. In Keynesian thought,

savings depend on the income level rather than on the interest rate. Moreover, in Sargent's model, money cannot be hoarded and is held only for making transactions. The position on money is compatible with the tenets of Islamic economics. Sargent model develops macro relations from interest-based micro behavior. It is simple to replace interest charges with profit-sharing at the micro level and carry the analysis through to macroeconomic relations. The acutal process of transforming the Sargent model into an interest-free model is developed in chapter four. The Sargent model and the interest-free model are contrasted in the summary at the end of chapter four. The model is analyzed in chapter five to discover the effects of monetary and fiscal policies on the aggregate variables such as consumption, investment, and profit-sharing ratio. The conclusions drawn from the analysis are summarized at the end of the chapter five.

Issues relating to economic development are the subject matter of chapter six. It will be demonstrated that the Islamic system of finance is superior to the conventional system for economic development. It is recommended that lagging economies adopt the Islamic financial system to maintain economic development in the face of inflation.

Chapter Four

Classical Models Adjusted for Interest-Free Financing

After demonstrating the need for interest-free models and describing the methodology for obtaining the desired models, it is time to focus on the development of the model. The representative Western model is modified into an interest-free model in this chapter.

As noted before, the fundamental difference between the Western system and the interest-free system is that funds from savers to investors are transferred on the basis of interest in the Western economies and a profit-sharing ratio in an interest-free economy. Financial arrangements negotiated on the basis of profit-sharing are generally named 'mudaraba' in contrast to the Western system of bonds.

Relevant parts of Sargent's Classical Model and their interest-free equivalents are presented in sections one through six. The complete Classical macroeconomic model, including the intermediate steps, and its equivalent, complete, interest-free macroeconomic model are given in section seven.

I. Aggregate Output

In the Classical model gross output, Y, is divided among consumption = C, net investment = I, government expenditures = G, and capital depreciation δK . That is:

$$(4.1.C) Y = C + I + \delta K + G$$

In the interest-free model the same definition of income is used. Firms in the interest-free closed economy produce a single, homogeneous, output at a rate of Y per unit of time. The rate of output is divided into a real rate of consumption, a real rate of net investment, a real rate of capital depreciation, and a real rate of government expenditures. The commodity market equilibrium is identical to equation (4.1.C):

$$(4.1.IF) Y = C + I + \delta K + G$$

II. Firms: Production and Investment Behavior

In the Classical Model the economy consist of a large number of firms. Given technology, the instantaneous production function of a typical firm is described by:

$$(4.2.C) Y_i = F(K_i, N_i)$$

Where Yi = gross output produced by the ith firm per unit time,

Ki = capital stock owned by the ith firm

N_i = labor, including entrepreneur's labor, employed by the ith firm per unit time.

The production function is subject to positive but diminishing marginal products of labor and capital. Marginal product of labor increases in response to increase in capital. Marginal product of capital also increases in response to an increase in labor.

Assuming that the production function is linearly homogeneous, it may be demonstrated that the marginal product of capital and marginal product of labor depend on the capital-labor ratio only. [Sargent, 1979, 7]

Firms, starting with a fixed amount of capital, obtain the desired capitallabor ratio by instantaneous variations in the employment of labor. Firms operating in a perfectly competitive labor market and a perfectly competitive product market, employ the desired amounts of labor at the market-determined wage rate and sell their output at the market-determined price level. Firms' decisions are motivated by an over-riding consideration to maximize their economic profits. The economic profits, Π_i , of a typical firm are given by:

(4.3.C)
$$\Pi_i = pF(K_i, N_i) - wN_i - (r + \delta - \pi)pK_i$$

where r = instantaneous rate of interest on bonds.

 δ = instantaneous rate of capital depreciation,

 π = anticipated rate of inflation

In order to maximize economic profits, firms must employ the amount of labor that equates the marginal product of labor with the real wage rate. Therefore the labor demand function faced by a typical firm is represented by:

$$(4.4.C)$$
 $F_{N_i}(K_i, N_i) = w/p$

where F_{Ni} = marginal product of labor employed by the ith firm.

Equation (4.4.C) is used to compute the amount of labor that yields a profit-maximizing capital-labor ratio and marginal product of labor of the firm. The capital-labor ratio and marginal product of labor must be identical for all firms because every firm is facing the same real wage.

Sargent [1979, 8] demonstrates, applying the Euler theorem and the linear homogeneity of the production function, that the individual rates of outputs represented by the equation (4.2.C) can be translated into the following aggregate production function:

$$(4.5.C)$$
 Y = F(K, N)

where K = aggregate capital stock

N = aggregate employment

which, in turn, implies the following economy-wide, labor demand function:

$$(4.6.C) F_N(K, N) = w/p$$

where F_N = marginal product of labor in the economy.

The investment demand of firms in the Classical Models depends on the gap between the marginal productivity of capital and the user cost of capital. The user cost of capital is composed of the anticipated real rate of interest plus the rate of capital depreciation. Although Sargent states that investment demand directly depends on the gap between the marginal product of capital and the user cost of capital, the investment demand is assumed to actually depend on the gap relative to the anticipated real rate of interest. That is:

(4.7.C)
$$dK/dt = I = I \{F_K - (r + \delta - \pi)\} / (r - \pi) \}$$

where F_K = marginal product of capital.

Equation (4.7.C) is re-written as:

$$(4.7.C)'$$
 $I = I(q - 1),$ $I' = dI/dq > 0$

where

(4.8.C)
$$q = [\{F_K - (r + \delta - \pi) / (r - \pi)\} + 1]$$

In other words:

(4.9.C)
$$q = q (K, N, r - \pi, \delta).$$

The behavior of firms in the interest-free world is different from the Classical models in the following respects:

The production relations employed in the Classical model including the technical assumptions regarding marginal productivity of labor and capital, being value-free, are accepted. But the concepts employed regarding the factors of production and their income shares need modification to be consistent with the principles of interest-free financing.

1) In the Classical model, employment of labor stands for the labor hired by the entrepreneurs from the market plus the entrepreneurs' personal labor. Consequently the wage bill, wN₁, represents the sum of the explicit and implicit wages. In interest-free models, the profit share of the firm rather than the implicit wage, is the reward to the entrepreneurs' personal labor. Therefore only labor hired from the market and the associated explicit wage bill are the corresponding relevant concepts for an interest-free economy.

2) In the Classical model, firms deduct the user cost of capital = $(r + \delta - \pi)pK$, as expense, from the total revenues to compute their profits. The user cost contains three components: depreciation cost = δ pK, change in value of the capital due to anticipated inflation = π pK and the finance cost of capital = rpK determined on the basis of the fixed rate of interest, r.

The concept of a fixed interest rate is not applicable in the interest-free system because it rewards capital before it produces wealth. In an interest-free economy, capital is rewarded only if the enterprise actually turns out to be profitable. The financier receives k% of the 'Islamic profits' as a reward for the use of the capital instead of interest income. 'Islamic profits' are equal to the total revenues less the total costs, where total costs do not include returns to capital and entrepreneural labor.

3) In the Classical model, firms evaluate profitability of the prospective investment projects by comparing marginal productivity of investment with the user cost of capital. Firms undertake those projects for which marginal productivity of investment is greater than or equal to the user cost of capital. Capital finance cost, a component in the user cost of capital, is calculated on the basis of market interest rate.

Since there is no interest in the interest-free economy, it is proposed here that firms view the expected profit-share of the financier as the capital finance cost. But how does the firm arrive at the expected profit-share of the capital?

It is assumed that the firms and financier know the 'normal' rate of Islamic

profits in the economy, $\Theta = (pY - wL)/pK$. The 'normal' rate of Islamic profits is used to negotiate the profit-sharing ratios, (1 - k):k, in which entrepreneurs and capital financiers share the expected Islamic profits respectively. Therefore the profit-share of the capital financier = $k\Theta pK$ is the expected finance cost to the entrepreneur.

The foregoing discussion suggests that the term $(r + \delta - \pi)$ representing user cost of capital in the Classical model be replaced by the term $(k\Theta + \delta - \pi)$ to represent user cost of capital in an interest-free economy.

- 4) In the Classical model, the goal of the firm is to maximize economic profits. It is assumed that the firm in the interest-free economy is interested in maximization of its profit-share, Ω_i .
- 5) The constrast between maximization of economic profits in the Classical model and maximization of the profit-share in the interest-free economy is remarkable. Any increase in the profit-share of the firm necessarily leads to a corresponding increase in the profit-share of the financiers in the interest-free economy. Therefore the spirit of co-operation is part and parcel of interest-free contracts. Therefore whenever the tide is high, both entrepreneur(s) and financier(s) thrive because the interests of the firms and the financiers are inseparable. This characteristic of interest-free contracts is in sharp contrast to interest-based contracts where firms benefit at the expense of the capitalist and vice versa.

The foregoing distinctions regarding the treatment of labor, capital, wage bill, and returns to capital suggest that the equations (4.2.C) and (4.3.C) be replaced by the following equations respectively:

$$(4.2.IF)$$
 $Y_i = F(K_i, L_i)$

where

K_i = fixed capital contributed by the participating financier to the ith firm on the basis of mudaraba contract.

Li = Labor hired by the ith firm

and

(4.3.IF)
$$\Omega_i = pF(K_i, L_i) - wL_i - (k\Theta + \delta - \pi)pK_i$$

where k = instantaneous profit-sharing ratio associated with the financier.

 Θ = 'normal' profit rate in the economy.

The necessary conditions for maximization of the firm's profit-share are:

$$(4.4.1F)$$
 $F_{L_i}(K_i, L_i) = w/p$

where F_{I,i} = marginal product of labor in the ith firm.

Because equation (4.4.IF) and equation (4.4.C) are mathematically similar, although they differ conceptually, application of Euler's theorem and linear homogeneity leads to the following aggregate production function for the interest-free economy:

$$(4.5.IF)$$
 Y = F (K, L)

where L = labor hired in the economy

and the following market labor demand function:

(4.6.IF)
$$F_{L}(K, L) = w/p$$

where $F_L(K,L) = \text{economy-wide marginal product of hired labor.}$

6) In equilibrium, aggregate investment must equal aggregate savings in an economy. [Conard, 1959, 47-65] The interest rate is a mechanism ensuring that financial borrowing by investors equals the financial lending by savers in the Classical economy. Equality between investment and savings in an interest-free economy is ensured by the profit-sharing ratio for capital, k, rather than by the interest rate.

In the Classical models, firms compare the marginal product of capital with the anticipated real user cost of capital, and investment demand is increased to the point where the marginal product of capital is equated to the anticipated real user cost of capital. In the interest-free economy, the anticipated user cost of capital is given by $(k\Theta + \delta - \pi)$ and investment demand increases until the user cost of capital equals the marginal product of capital.

The foregoing discussion suggests that the relations (4.7.C) through (4.8.C) be replaced by the equations (4.7.IF) through (4.8.IF) to represent investment demand in an interest-free economy.

(4.7.IF)
$$dK/dt = I = I [\{ F_K - (k\Theta + \delta - \pi) \} / (k\Theta - \pi)]$$

and

(4.7.IF)'
$$I = I(\eta - 1), I' = dI/d\eta > 0$$

and

(4.8.IF)
$$\eta = [\{F_K - (k\Theta + \delta - \pi)\}/(k\Theta - \pi)] + 1$$

or

$$(4.9.IF) \eta = \eta(K, L, k, \Theta, \delta, \pi)$$

III. Households: Portfolio Decisions

In the Classical Model, households allocate their wealth between money, bonds, and equities. The nominal rate of return on money is zero and the real rate of return on money is $-\hat{p}/p$. The nominal yield on bonds is r and the anticipated real yield on bonds is $(r-\pi)$. Firms issue equities to finance all their investment. Assuming bonds and equities are perfect substitutes, real yields on bonds and equities must be equal because households will refuse to hold a less attractive asset [Sargent, 1979, 11]. Since the real yields on both these assets are the same, bonds and equities are combined together into a composite financial asset, bonds-plus-equities.

Total real wealth, W, of the households in the Classical models is given by:

$$(4.10.C) W = (V + B + M) / p$$

Where M = nominal value of money,

B = nominal value of outstanding bonds,

V = nominal value of equities.

It is assumed that households allocate their wealth between the two groups of financial assets: bonds-plus-equities and money. Demand functions for bonds-plus-equities and money are described by the equations (4.11.C) and (4.12.C) respectively:

(4.11.C)
$$M^{D/p} = m(r, Y, W)$$

and

(4.12.C)
$$(B^D + V^D)/p = b (r, Y, W)$$

Sargent [1979, 13] assumes that the demand functions for money and bonds-plus-equities, (4.11.C) and (4.12.C), are such that

(4.13.C)
$$(B^D + V^D + M^D)/p = W$$

holds for all values of r, Y, and W at each moment. This requires that the following conditions be met at each moment:

$$(m_r + b_r) = 0$$
, $(m_Y + b_Y) = 0$ and $(m_W + b_W) = 1$ [Sargent, 1979, 14].

where m_T = change in demand for real balances in response to a unit change in nominal rate of interest.

b_r = change in demand for bonds-plus-equities in response to a unit change in the nominal rate of interest.

mY = change in demand for real balances for a unit change in output

by " = change in demand for bonds-plus-equities in response to a unit change in real output

m_W = change in demand for real balances in response to a unit change in real wealth

bW = change in demand for bonds-plus-equities in response to a unit change in real wealth

Moreover it is assumed that $m_T < 0$, $m_{Y} > 0$ and $m_{W} = 0$. That means $b_T > 0$, $b_{Y} < 0$, and $b_{W} = 1$. These conditions imply that all increases in household wealth are held only in the form of equities-plus-bonds in the Classical model, and therefore demand for real balances is not affected by changes in wealth.

Portfolio equilibrium is obtained when the demand for bonds-plus-equities equals their supply and, at the same time, demand for real money balances equals the amount of real money supply. But, according to the Walras law, if there are two markets, equilibrium in one market necessarily implies equilibrium in the other. Hence portfolio equilibrium may be obtained by equality between the demand for and the supply of either bonds-plus-equities or real balances. Traditionally the portfolio equilibrium is described by equilibrium in the money market:

$$(4.14.C)$$
 $M/p = m(r, Y)$

where $m_r < 0$ and $m_V > 0$

Although Sargent's model does not acknowledge it, the Classical model is based on Friedman's theory of demand for money. According to this theory, money is held only as a temporary abode of generalized purchasing power. The market value of the money is independent of the interest rate, the conversion cost of money is zero, money earns no interest, and money serves as a means of payment. The economic function of money is to separate a sale from a purchase and to permit exchange without barter. Again, since money is used only as a medium of exchange and not for speculation, these characteristics of money are accepted in Islam.

What is the role of the interest rate in the demand for money? The interest rate enters formally into the demand for money as an alternative cost of holding money, which is primarily the earnings foregone on all those financial assets that, by and large, do not serve as money.

The total amount of wealth serves as a budgetary constraint within which each utility-maximizing household operates. Each type of asset that enters into a household's stock of wealth yields different income streams over time, and different combinations of assets for a given wealth level are likely to yield different nominal income streams. A typical household, given its utility function, selects the basket of assets that yields the greatest amount of satisfaction. Hence the problem is to determine the optimal distribution of one's total wealth among all available assets in order to yield maximum satisfaction to the wealth-holder.

Therefore, although the demand for real money balances is assumed to vary directly with the rate of output and inversely with the nominal interest rate, money is primarily held for the transaction motive only.

The opportunity cost of holding money is measured by the difference between the real yield on bonds-plus-equities and the real yield on money. When the interest rate rises, bonds-plus-equities yield higher returns and people are motivated to hold as little money as possible for making transactions. Consequently people economize on holding of real balances to buy more attractive bonds-plus-equities. Notice that such economy in holding of real balances is achieved by financing the given level of economic activity by a smaller amount of real balances. The opposite is true when the interest rate declines. In this scenario, the transactions demand for money changes in response to changes in the interest rate, because the interest rate is viewed as an opportunity cost of holding money.

In the interest-free economy the function of transferring resources from the savers to investors is performed by mudarabas rather than bonds. Hence mudarabas serve the same purpose in an interest-free economy that is served by bonds in the Classical economy. Therefore the market for bonds-plus-equities is replaced by the market for mudarabas-plus-equities in an interest-free economy, and wealth in the interest-free economy is defined as:

(4.10.F)
$$W = (\Phi + V + M)/p$$

where Φ = nominal value of outstanding mudarabas.

Assuming, like Sargent, that mudarabas and equities are perfect substitutes, the expected yield on mudarabas, k Θ , must equal the yield on equities in the interest-free economy. Therefore mudarabas-plus-equities in the interest-free economy is the equivalent of bonds-plus-equities in the Classical economy. Consequently demand for real balances and the demand for mudarabas-plus-equities in an interest-free economy are described by the relations (4.II.IF) and (4.12.IF) respectively:

(4.11.IF)
$$M^{D/p} = m (k\Theta, Y, W)$$

and

(4.12.1F)
$$(\Phi^D + V^D)/p = \phi(k\Theta, Y, W)$$

It is assumed that total real wealth always equals the sum of the demand for equities, mudarabas and real balances:

(4.13.IF)
$$(\Phi^D + V^D + M^D)/p = W$$

Moreover, as the 'normal' profit rate in the interest-free economy is generally known, demand for real balances varies in response to variations in the profit-sharing ratio and the real income. Therefore the portfolio equilibrium for the interest-free economy is described by the following condition:

$$(4.14.1F)$$
 $M/p = m(k, Y)$

where
$$m_k < 0$$
 and $m_V > 0$.

It is assumed, following Sargent, that the above asset-demand-functions obey the constraints imposed by Sargent on the Classical model so that all increments in a household's wealth are held in the form of mudarabas-plus-equities and none of the increased wealth is held in the form of real balances.

The money-demand-function (4.14.IF) assumes that people desire to hold

more real balances in response to increases in their incomes. Moreover as the profit-sharing ratio, k, rises, the expected rate of return on mudarabas, kO, increases, which, in turn, increases the incentive to economize on real balances held for transactions, and hence a given level of economic activity is financed by a smaller amount of real balances. The opposite happens in response to a fall in the profit-sharing ratio.

IV. Role of the Government

In the Classical Model the government is allowed to levy taxes, make transfer payments, and purchase goods. The government budget is subject to the following constraint:

(4.15.C)
$$G = T + (\dot{B}/p) + (\dot{M}/p)$$

where G = real rate of government expenditures

T = real tax revenues net of transfers

B = dB/dt = change in outstanding bonds over time

 \dot{M} = dM/dt = change in stock of money over time.

The government buys and sells bonds in the open market subject to the constraint:

$$(4.16.C)$$
 $dM = - dB$

Notice that a balanced government budget is assumed here. This is another condition that must be followed in an Islamic economy.

In the interest-free system the government is permitted to use all possible means of controlling the money supply that do not involve interest. Hence, it is assumed that, when necessary, the government will finance its budget deficits by issuing mudarabas, rather than bonds, in the interest-free economy. The government may also sell its own mudarabas to obtain funds for financing its budget deficits rather than investing directly in profitable industrial or commercial activities. The question is how the government can share profits with the holders of mudarabas?

The government uses its funds to provide social services to the public at large. Economic analysts frequently estimate the social rates of return on these services. The social rate of return should be multiplied by the agreed

profit-sharing ratio to arrive at the profit-share of the mudarabas holders. This scheme allows the government to finance its current budget deficit although payments to the mudarabas holder represent an increase in government outlays in subsequent years. Therefore, the government budget constraint is expressed by:

(4.15.IF)
$$G = T + (\dot{\Phi}/p) + (\dot{M}/p)$$

subject to the conditions:

$$(4.16.IF)$$
 $dM = - d\Phi$

where $\dot{\Phi} = d\Phi/dt =$ change in outstanding mudarabas over time

V. Households: Consumption Decisions

Households' decisions to allocate their wealth among various financial assets was described in section three. This section is devoted to allocation of the household's disposable income, Y_D, between consumption and savings.

In the Classical model, consumption demand, C, is described by the consumption function:

(4.17.C)
$$C = C(Y_D, r - \pi)$$

where
$$0 < C_1 = \partial C/\partial Y_D < 1$$

and
$$C_2 = \partial C/\partial (r - \pi) < 0$$

Consumption demand varies directly with disposable income and inversely with the anticipated real rate of interest. The marginal propensity to consume is positive and less than unity.

The fact that the consumption function is based on the utility maximization behavior of households with respect to choice between present and future consumption subject to given present and future incomes is ignored by Sargent. Nevertheless, it is pointed out that the consumption function is subject to the following constraint:

$$C + S = Y_D$$

where S stands for savings

Sargent's definition of real disposable income is more realistic than the traditional definitions. Real disposable income is assumed to consist of gross national output, Y, plus appreciation in the value of existing real equities, $q\dot{K}$, minus capital depreciation, δK , tax payments net of transfers, T, rate of capital depreciation on financial assets due to inflation, $[(M+B)/p]\pi$, and the real rate at which new equities are issued, \dot{K} . Hence disposable income can be written as:

(4.18.C)
$$Y_D = Y - \delta K - T - [(M + B)/p]\pi + q\dot{K} - \dot{K}$$

where $\dot{K} = dK/dt = I$

It is demonstrated by Sargent [1979, 12] that q turns out to be the "ratio of the nominal value of equities to the nominal value of the capital stock evaluated at the price of newly produced capital."

In the interest-free economy, an equivalent consumption function may be described by:

(4.17.IF)
$$C = C (Y_D, k\Theta - \pi)$$

Since the variable q in the Classical model has its counterpart η in the interest-free model, the definition of disposable income for the interest-free economy equivalent to (4.18.C) would be:

(4.18.IF)
$$Y_D = Y - T - \delta K - \{ (M + \Phi) / p \} \pi + \eta \dot{K} - \dot{K}$$

VI. Households: Labor Supply Decisions

In the Classical model, the labor supply function is given by:

(4.19.C)
$$N^S = N(w/p)$$
, $N' = dN/d(w/p) > 0$

where NS is the instantaneous labor supply.

Sargent assumes, following Classical economists, that all those people who are willing to work find employment, so the labor market equilibrium is represented by:

$$(4.20.C)$$
 N = N(w/p).

Again, households make a labor-leisure choice in order to maximize their utility under given time constraints. The fact that the labor supply is based on the labor-leisure choice to maximize households' utility is not mentioned in Sargent's study.

In the interest-free model, it is assumed that L^S repesents the labor available for hire and L stands for the amount of labor actually hired from the labor market. This modification is necessary to be consistent with the labor demand function developed in section two. Accepting the format and logic employed in (4.19.C) and (4.20.C), the following equivalent relations hold for an interest-free economy:

$$(4.19.IF) L^S = L(w/p), L' = dL^S/d(w/p) > 0.$$

$$(4.20.IF)$$
 L = L(w/p).

VII. Complete Macroeconomic Models

Sargent [1979, 18] combines equations (4.1.C), (4.5.C), (4.6.C), (4.7.C), (4.14.C), (4.17.C) and (4.20.C) to formulate the complete Classical model shown in the following seven equations:

(4.I.C)
$$w/p = F_N(K, N)$$

$$(4.II.C) N = N(w/p)$$

$$(4.III.C) Y = F(K, N)$$

(4.IV.C)
$$C = C [Y - T - \delta K - \{(M + B)/p\}\pi + \{q(K, N, r - \pi, \delta) - 1\} I; (r - \pi)]$$

(4.V.C)
$$I = I[q(K, N, r - \pi, \delta) - 1]$$

$$(4.VI.C) Y = C + I + \delta K + G$$

$$(4.VII.C)$$
 $M/p = m(r, Y).$

The model contains seven endogenous variables w/p, N, Y, C, I, r and p. All other variables such as T, G, δ , π , and M are exogenous in the model. The model is complete because the number of endogenous variables are equal to the number of equations in the model.

The corresponding complete interest-free model is obtained by combining equations (4.1.IF), (4.5.IF), (4.6.IF), (4.7.IF), (4.14.IF), (4.17.IF), and (4.20.IF), as presented below:

$$(4.I.IF) w/p = F_I(K, L)$$

$$(4.II.IF) L = L (w/p)$$

$$(4.III.IF) Y = F(K, L)$$

(4.IV.IF)
$$C = C [Y - T - \delta K - \{ (M + \Phi)/p \} \pi + \{ (K, L, k, \Theta, \delta, \pi) - 1 \} I; (k\Theta - \pi)]$$

(4.V.IF)
$$I = I \{ \eta (K, L, k, \Theta, \delta, \pi) - 1 \}$$

$$(4.VI.IF) Y = C + I + \delta K + G$$

$$(4.VII.IF) M/p = m(k, Y).$$

The interest-free model is complete because it contains seven equations with seven endogenous variables w/p, N, Y, C, I, p and k. All other variables are exogenous.

VIII. Summary

Modification of a Western macroeconomic model into an interest-free Islamic model is carried out in this chapter. During the course of the investigation, several distinctions surfaced between the Western and the Islamic economic systems.

The transition from a Western system to an Islamic system changes the treatment given to various factors of production including labor and capital. A firm's demand for labor is based on the profits expected by the firm under each system. Firms are interested in maximization of economic profits in the Western economies and maximization of their share out of accrued Islamic profits in an interest-free economy. Profit-share of the firm is obtained by deducting from the total revenues of the firm, I) the cost of the hired labor and 2) the expected claim of financiers calculated on the basis of the profit-sharing ratio. On the other hand, economic profits are obtained by deducting 1) the wages to the hired labor, 2) the opportunity cost of entrepreneural labor, and 3) the capital cost calculated on the basis of the

interest rates. In the Western system, a partial reward to the entrepreneur, called the implicit labor cost, rewards to the hired labor, and rewards to the financier are fixed a priori. But in the Islamic system, only wages to hired labor is acknowledged in advance. All rewards for entrepreneurs and financiers are recognized on an ex-post basis only. They accrue as a result of distributing the Islamic profits on the basis of their respective profit-sharing ratios.

It is well known that entrepreneurs and financiers have opposing interests in the Western system. If the interest cost rises, rewards to capital goes up leading to a corresponding reduction in profits for the entrepreneurs. It was discovered, however during the course of the study, that rewards for entrepreneurship and finance capital go hand in hand in the interest-free system. Cooperation is inherent in the Islamic system.

Total wealth is held in the form of money, equities and interest-bearing bonds in the Western system. Bonds do not exist in interest-free societies. People, however, in interest-free Islamic economies may carry mudarabas, an interest-free equivalent to bonds.

Hoarding of money is assumed away from the models. People demand money to conduct business transactions. The demand for money is dictated by the level of income and the prevailing interest rate in the Western models. Demand for money in an Islamic society depends on the level of income and the profit-sharing ratio rather than on the interest rate.

CHAPTER FIVE

Policy Analysis in Interest-Free Economies

The behavior of the complete interest-free model, consisting of equations (4.I.IF) - (4.VII.IF), developed in chapter four, will be analyzed in this chapter.

For ready reference, the model is re-written and its linearized form is derived in section one. A simplified linear system is presented in matrix form in order to explain its equilibrium mechanism in section two.

Implications of changes in capital stock are analyzed in section three. Fiscal and monetary effects, along with dichotomy, neutrality and stability conditions under two different scenarios, are analyzed in sections four and five respectively. Results of the analysis are summarized in section six.

I. Linarization of the System

The complete interest-free model consists of the following seven equations:

Labor Demand Function:

(5.1)
$$w/p = F_{I}(K, L)$$

where F(K, L) is defined in equation (5.3)

Labor Market Equilibrium:

(5.2)
$$L = L(w/p)$$

Production Function:

$$(5.3)$$
 Y = F(K, L)

Consumption Function:

(5.4)
$$C = C[Y - \delta K - T - \{ (M + \Phi) / p \} \pi + \{ \eta (K, L, k, \Theta, \delta, \pi) - 1 \} I; k\Theta - \pi]$$

Investment Function:

(5.5)
$$I = I \{ \eta (K, L, k, \Theta, \delta, \pi) - 1 \}$$

Commodity Market Equilibrium:

(5.6)
$$Y = C + I + \delta K + G$$

Money Market Equilibrium:

(5.7)
$$M/p = m(k, Y)$$

The linearized form of equations (5.1) through (5.7) is given in equations (5.8) through (5.14) respectively:

$$(5.8) d(w/p) = F_{LK}dK + F_{LL}dL$$

(5.9)
$$dL = \dot{L} d (w/p)$$

$$(5.10) dY = F_K dK + F_L dL$$

$$\begin{aligned} \text{(5.11)} & \qquad \text{dC} = C_1 \text{dY} - C_1 \text{dT} - C_1 (\delta - I\eta_K) \text{dK} - C_1 (K - I\eta_\delta) \text{d}\delta \\ & - [C_1 \{ (M + \Phi) / p \} + C_2 - C_1 I \eta_{\pi}] \text{d}\pi \\ & - (C_1 \pi / p) (\text{dM} + \text{d}\Phi) \\ & + \{ C_1 \pi (M + \Phi) / p^z \} \text{d}p + (C_1 I\eta_L) \text{d}L \\ & + (C_1 I \eta_K + C_2 \Theta) \text{d}k \\ & + (C_1 I \eta_\Theta + C_2 k) \text{d}\Theta + C_1 (\eta - 1) \text{d}I \end{aligned}$$

$$(5.12) & \qquad \text{dI} = I' \eta_K \text{dK} + I' \eta_L \text{dL} + I' \eta_K \text{dk} + I' \eta_\Theta \text{d}\Theta + I' \eta_\pi \text{d}\pi \end{aligned}$$

$$(5.13) dY = dC + dI + \delta dK + K d\delta + dG$$

(5.14)
$$(1/p) dM - (M/p^2) dp = m_k dk + m_Y dY$$

The relations (5.15) through (5.18) were used in obtaining the differential equations (5.8) - (5.14):

(5.15)
$$\eta = [F_K - (k\Theta + \delta - \pi) / (k\Theta - \pi)] + 1$$

with its total derivative:

$$(5.16) \hspace{1cm} d\eta = \{1/(k\Theta - \pi)\}(F_{KK}dK + F_{KL}dL - d\delta - \eta kd\Theta - \eta \Theta dk + \eta d\pi)$$

and

$$(5.17) \eta = \eta (K, L, k, \Theta, \delta, \pi)$$

with its total derivative:

(5.18)
$$d\eta = \eta_K dK + \eta_L dL + \eta_K dk + \eta_\Theta d\Theta + \eta_\delta d\delta + \eta_\pi d\pi$$

Comparison of equations (5.16) and (5.18) implies relations (5.19) through (5.24) provided $k\Theta \ge \pi$:

(5.19)
$$\eta_{K} = F_{KK}/(k\Theta - \pi) < 0$$

(5.20)
$$\eta_{L} = F_{KL} / (k\Theta - \pi) < 0$$

(5.21)
$$\eta_{\mathbf{k}} = -\eta\Theta/(\mathbf{k}\Theta - \eta) < 0$$

(5.22)
$$\eta_{\pi} = \eta / (k\Theta - \pi) > 0$$

$$\eta_{\Theta} = -\eta k / (k \Theta - \pi) < 0$$

(5.24)
$$\eta_{\delta} = -1/(k\Theta - \pi) < 0$$

Compare equations (5.21) and (5.22) to obtain:

(5.25)
$$\eta_{\pi} = -(1/\Theta) \eta_{k}$$

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II. Equilibrium Mechanism

The linearized system given in equations (5.8) through (5.14) is simplified by assuming that the budget constraint, $dM + d\Phi = 0$, is operative and the rate of depreciation, δ , and the 'normal' profit rate, Θ , are fixed. The simplified linearized system is presented in matrix form in table one:

Table One:

	Г						٦
d(w/p)	1	-F _{LL}	0	0	0	0	0
dL	-L'	1	0	0	0	0	0
dY	0	-F _L	1	0	0	0	0
dC	0	$-c_1^{I\eta}L$	-°C ₁	1	-C ₁ (η-1)	$-(C_1I\eta_k + C_2\Theta)$	$-C\pi(M+\varPhi)/p^{s}$
dI	0	-1'nL	0	0	1	$-\iota_{\eta_{\underline{k}}}$	0
dk	0	0	1	-1	-1	0	0
dp	0	0	m _Y	0	0	m _k	M/p²
	-						

$$\begin{split} F_{LK} dK & & & \\ 0 & & \\ F_{K} dK & & \\ & & -C_{1} dT - C_{1} (\delta - I_{\eta_{K}}) dK - \{C_{1} \{ \ (M + \Phi)/p \} + C_{2} - C_{1} I_{\eta_{\pi}} \} d\pi \\ & & \\ I'\eta_{K} dK + I'\eta_{\pi} d\pi & & \\ dG + \delta dK & & \\ (l'p) dM & & \\ \end{split}$$

Examination of the above matrix indicates that the system can be solved in stages. It is possible to solve the 2x2 subsystem consisting of the first two equations, and then use the results to solve the 3x3 subsystem consisting of the first three equations. Solutions to the subsystems can be plugged into the rest of the equations to obtain the solution of the entire 7x7 system. Such a system is called 'block recursive' because the solution to the system can be obtained by finding solutions to various blocks that can be combined together. In other words, it is possible to formulate one or more independent subsystems that can be solved independently of the rest of the system. Their solution is used to determine the solution to the remaining variables in the entire system.

Examination of the matrix reveals that equations (5.8) and (5.9) together form an independent subset that determines the equilibrium values of the real wage rate and the rate of employment. Furthermore, equations (5.8), (5.9) and (5.10) together form another independent subsystem that determines the equilibrium values of the rate of output, rate of employment, and the real wage rate. As these variables are determined independently of the rest of the system, it is known that the exogenous variables, except K, do not affect the real wage rate, employment, or output.

In a nutshell, the system can be solved sequentially. First, determine the real wage rate, employment, and output, using equations (5.8), (5.9) and (5.10). Knowing that the rate of output is determined by the above subsystem, given K, the rest of the equations of the system must ensure that aggregate demand for the output is matched with the rate of output for equilibrium.

Two scenarios for the determination of the aggregate demand are analyzed in this study. In the first scenario, it is assumed that the coefficient of dp in the consumption function, equation (5.11), is zero, which makes the entire term $C_1\pi(M+\Phi)/p^2$ zero. In this case the subsystem consisting of equations (5.11) to (5.14) can be further decomposed into two completely independent subsystems: one consisting of equations (5.11) to (5.13) and the other consisting of equation (5.14) only. This system represents a pure Classical position in which money has no role. This system is analyzed in section four and the case in which money plays its role in determining the real variables is analyzed in section five.

III. Variations in Capital Stock

Variations in the rates of employment, output, and real wages in response to changes in capital stock are analyzed in this section. In subsequent sections, however, such changes in capital stock will be assumed away.

A. Effect on Real Wages

Substitute the value of dL from equation (5.9) into equation (5.8) and obtain:

(5.26)
$$d(w/p) = [F_{LK}/(1 - L'F_{LL})] dK$$

By assumption, $F_{LK} > 0$, L' > 0 and $F_{LL} < 0$. It follows that the expression $[F_{LK} / (1 - L'F_{LL})] > 0$, implying that an increase in capital stock will decrease the real wage rate by changing the demand for labor.

B. Effect on Employment

Substitution of the value of d(w/p) from equation (5.26) into the equation (5.8) gives:

(5.27)
$$dL = [L'F_{LK}/(1 - L'F_{LL})] dK$$

But $L'F_{LK} / (1-L'F_{LL})$] > 0, indicating that an increase in capital stock will stimulate employment of labor and a reduction in the stock of capital will reduce employment of labor.

C. Effect on Real Output

Substitution of the value of dL from equation (5.27) into the equation (5.10) leads to:

(5.28)
$$dY = [\{F_L L'F_{LK} / (1 - L'F_{LL})\} + F_K] dK$$

Under our assumptions, F_L , F_K , and $L'F_{LK}$ / $(1-L'F_{LL})$ are all positive. Therefore an increase in capital stock will increase real output and a decrease in capital stock will decrease real output.

It is demonstrated in equations (5.26) through (5.28) that a once-for-all change in the capital stock will lead to a once-for-all change in the real wage rate, employment, and real output in the same direction. It is assumed in subsequent analysis that capital stock is fixed, which implies dY, d(w/p) and dN are zero.

It was pointed out in section two that the subsystem containing equations (5.11) to (5.14) is further dichotomized into two independent subsystems when the coefficient of dp is zero. One of the subsystems containing equations (5.11) - (5.13), in combination with the subsystem containing equations (5.8) - (5.10), determines the values of the six real variables: w/p, L, Y, C, I, and k. Knowing that w/p, L and Y are independently determined by the equations (5.11) - (5.13) determine such values of C, I, and k, thereby ensuring that the aggregate demand equals the output produced.

The coefficient $-C_1\pi(M+\Phi)/p^2=0$ when either $\pi=0$ or $(M+\Phi)=0$. If one assumes that, like Classicals, $(M+\Phi)=0$, then the desired consumption, and investment, and hence aggregate demand are independent of the price level.

Consumption and investment are components of aggregate demand and they change in response to variations in the profit-sharing ratio. Whenever the profit-sharing ratio changes, corresponding changes in consumption and investment rates must ensure equality between aggregate demand and aggregate supply. Hence the profit-sharing ratio must undergo appropriate changes to bring about the equilibrium whenever the system is out of equilibrium.

After analyzing changes in the profit-sharing ratio, investment demand, and consumption demand, in response to changes in government spending, taxation and anticipated inflation, two equivalent explanations for determination of the profit-sharing ratio follow:

A. Fiscal Effects on Profit-Sharing Ratios

Substitute the values of dC and dI from equations (5.11) and (5.12) into equation (5.13) and simplify by assuming $d\Theta=0$, $d\delta=0$ and dK=0 to obtain:

(5.29)
$$-C_{1}dT + [(C_{2}\Theta + C_{1}I\eta_{k}) + \{C_{1}(\eta - 1) + 1\}I'\eta_{k}]dk$$

$$- (I/\Theta)[(C_{2}\Theta + C_{1}I'\eta_{k}) + \{C_{1}(\eta - 1) + 1\}I'\eta_{k}]d\pi + dG = 0$$

or

(5.30)
$$-C_1 dT + H dk - (H/\Theta) d\pi + dG = 0$$

or

(5.31)
$$dk = (C_1 / H) dT + (1/\Theta) d\pi - (1/H) dG$$

where

(5.32)
$$H = \{ (C_2\Theta + C_1I\eta_k) + \{ C_1(\eta - 1) + 1 \} I'\eta_k \}$$

is the differential of the aggregate demand with respect to the profit-sharing ratio. It is demonstrated below that H must be negative for the system to be stable. But negativity of H requires:

(5.33)
$$(-C_2\Theta/C_1) > I\eta_k + (\eta - 1)I'\eta_k$$

But $I\eta_k + (\eta - 1) I'\eta_k$ is equal to $\partial Y_D / \partial k$. Therefore stability requires that responsiveness of the disposable income with respect to the profit-sharing ratio must be less than the quantity $-C_2\Theta / C_1$.

Equation (5.31) implies relations (5.34) through (5.36) provided H is negative:

$$(5.34) \qquad \partial k / \partial T = (C_1 / H) < 0$$

$$(5.35) \qquad \partial k / \partial G = -(1/H) > 0$$

$$(5.36) \qquad \partial \mathbf{k} / \partial \pi = (1/\Theta) > 0$$

Equation (5.36) also implies:

$$(5.37) \qquad \partial \mathbf{k} / \partial \pi - (1/\Theta) = 0$$

Therefore quations (5.34) to (5.36) imply that increases in government spending and anticipated inflation will increase the profit-sharing ratio while an increase in taxes will decrease the profit-sharing ratio. Equation (5.37) indicates that change in the profit-sharing ratio in response to change in anticipated inflation equals ($1/\Theta$).

B. Fiscal Effects on Investment

Assuming $d\Theta = d\delta = dK = 0$, equation (5.12) can be written as:

(5.38)
$$dI = (I'\eta_k) dk + (I'\eta_{\pi}) d\pi$$

(5.39)
$$dI = (I'\eta_k) dk - (I/\Theta) I'\eta_k d\pi$$

But equation (5.31) dictates that:

(5.40)
$$k = k(T, G, \pi)$$

which implies

(5.41)
$$dk = (\partial k / \partial T) dT + (\partial k / \partial G) dG + (\partial k / \partial \pi) d\pi$$

Substitution of equation (5.41) into equation (5.39) gives:

(5.42)
$$dI = I'\eta_{k} (\partial k / \partial T) dT + I'\eta_{k} (\partial k / \partial G) dG$$

$$+ [I'\eta_{k} (\partial k / \partial \pi) - (I'\eta_{k}) / \Theta] d\pi$$

which, in turn, leads to the following relations:

(5.43)
$$\partial I/\partial T = I'\eta_k (\partial k/\partial T) > 0$$

(5.44)
$$\partial I / \partial G = I' \eta_k (\partial k / \partial G) < 0$$

and

(5.45)
$$\partial I/\partial \pi = I'\eta_{k} (\partial k/\partial \pi - I/\Theta) = 0$$

The foregoing relations suggest that an increase in taxes will increase investment spending and an increase in government spending will reduce investment spending. That is, some crowding out will occur. Change in anticipated inflation, however, does not effect investment decisions.

C. Fiscal Effects on Consumption

Substitution of equations (5.38) and (5.41) into equation (5.11) under the assumptions $dK = d\Theta = d\delta = (dM + d\Phi)$ gives:

(5.46)
$$dC = \{ -C_1 + \{ C_1 (\eta - 1) 1' \eta_k + C_1 I \eta_k + C_2 \Theta \} (\partial k / \partial T) \} dT$$

$$\begin{split} & + \; [\; C_1 \; (\; \eta \; - \; 1\;) \; I' \eta_k \; + \; C_1 I \eta_k \; + \; C_2 \Theta \;] \; (\; \partial \; k \; / \; \partial \; G) dG \\ & + \; [C_1 (\eta \; - 1\;) I' \eta_k \; + \; C_1 I \eta_k \; + \; C_2 \Theta] \; [(\partial \; k / \partial \; \pi) \; - \; (I/\Theta)] d\pi \end{split}$$

and

(5.47)
$$dC = -C_1 + H(\partial k/\partial T) dT + H(\partial k/\partial G) dG + H\{(\partial k/\partial \pi) - (1/\Theta)\} d\pi$$

If H is negative and η is not too much less than unity then equation (5.47) implies:

$$(5.48) \qquad \partial C / \partial T = -C_1 + H (\partial k / \partial T) < 0$$

$$(5.49) \qquad \partial C / \partial G = H (\partial k / \partial T) < 0$$

and

$$(5.49) \qquad \partial C / \partial \pi = 0$$

Hence increases in government spending and taxation will reduce consumption and decreases in government spending and taxation will increase consumption. Changes in anticipated inflation have no effect on consumption.

To recapitulate: aggregate supply is independent of all the exogenous variables except capital stock. Whenever changes in the exogenous variables, other than capital stock, disturb the initial equilibrium by changing the level of aggregate demand, however, the profit-sharing ratio moves in appropriate direction to restore the equilibrium.

But how is the profit-sharing ratio determined? There are two alternative explanations regarding determination of the equilibrium profit-sharing ratio. One of these approaches is akin to the leakages-injections approach and the other may be called the mudaraba funds market approach.

D. Leakages-Injections Analysis

Disposable income spent on activities other than consumption are called leakages and all the uses of output other than consumption are called injections. Macroeconomic equilibrium is obtained whenever aggregate demand equals aggregate supply or, equivalently, leakages equal injections.

Knowing $(M + \Phi) = 0$, disposable income can be written as:

(5.51)
$$Y_D = Y - T - \delta K + (\eta - 1) I$$

As disposable income is distributed between savings and consumption, it may be written that:

(5.52)
$$S + C = Y - T - \delta K + (\eta - 1)I$$

Substitution of Y from equation (5.6) into equation (5.52) yields the following equilibrium condition in the leakages-injections form:

(5.53)
$$G + \eta I = S + T$$

The equilibrium profit-sharing ratio is determined at the point where real government expenditures plus real investment, evaluated at the stock market value of equities, η , is equal to the savings plus taxes.

Assuming G and T are exogenous, slopes of the $G + \eta I$ and S + T functions are dictated by the slopes of the investment schedule and the saving schedule respectively.

The slope of the investment schedule is:

(5.54)
$$\partial \eta I / \partial k = \eta_k I + \eta I' \eta_k < 0$$

provided $I > -\eta I'$ holds;

and the slope of the saving function is given by:

(5.55)
$$\frac{\partial S}{\partial k} = (\frac{\partial Y_D}{\partial k}) - (\frac{\partial C}{\partial k})$$

$$= (\frac{\partial Y_D}{\partial k}) - \{C_1(\frac{\partial Y_D}{\partial k}) + C_2\}$$

It was assumed, for stability, that

$$(\partial Y_D / \partial k) < (-C_2\Theta/C_1)$$

which implies:

$$(5.56) \qquad (\partial S/\partial k) < (1 - C_1) (-C_2\Theta/C_1) - C_2$$

Therefore stability of the system requires that the slope of the saving function must be less than a positive number given by $(1 - C_1) (- C_2\Theta/C_1) - C_2$.

The actual value assumed by the slope could be positive, zero or even negative.

A zero slope indicates savings are insensitive to the profit-sharing ratio. In this case savings are determined by other considerations such as income level.

Assuming a positive value for the slope of the saving function, an increase in government spending will increase the value of the $G+\eta I$ schedule and so the intersection between the new $G+\eta I$ schedule and the original S+T function will occur at a level higher than the original level of the profit-sharing ratio. Similarly an increase in taxes will increase the value of the S+T schedule leading to a new equilibrium at a lower level of the profit-sharing ratio. Notice that these results agree with earlier results obtained in equations (5.34) and (5.35).

E. Mudaraba Funds Market Analysis

Substitution of the value of G in equation (5.53) from equation (4.15.IF) implies:

(5.57)
$$(\dot{\Phi}/p) + (\dot{M}/p) + \eta I = S$$

Equation (5.57) states that the desired savings must equal the sum of the actual growth rates of mudarabas, real balances, and equities. That is, the demand for financial assets, dictated by savings must equal the supply of financial assets, determined by the desired investment. Comparison of equations (5.53) and (5.57) implies:

(5.58)
$$(\dot{\Phi} + \dot{M})/p = S - \eta I$$

and

(5.59)
$$(\dot{\phi} + \dot{M})/p = G - T$$

In equilibrium, actual growth of the financial assets issued by the government must equal the government budget deficit. In other words, for given budget deficits, the profit-sharing ratio must adjust to ensure that the desired savings minus real value of equities are exactly equal to the budget deficit.

As increase in government spending, ceteris paribus, increases the budget deficit and implies an increased growth of financial assets, which leads to an excess of desired savings over the desired investment at the original equilibrium position. The investment schedule must rise in order to bring the system to a new equilibrium corresponding to a higher profit-sharing ratio.

Similarly, the profit-sharing ratio will fall in response to an increase in taxation through an upward shift in the S + T schedule. Notice that these conclusions agree with our earlier results.

F. Monetary Policy Analysis

Equations (5.1) through (5.3) determine wages, employment, and output; and equations (5.4) through (5.6) determine consumption, investment, and the profit-sharing ratio. In this situation, equation (5.7) determines the price level that is compatible with equality between aggregate supply and aggregate demand. Multiplication of equation (5.14) by (p/M) gives us:

(5.60)
$$dp/p = dM/M - m_k(p/M)dk - m_Y(p/M)dY$$

For given Y and k, as determined by equations (5.1) through (5.6), prices and real balances grow at the same rate. Increases in output, however, will reduce prices; and increase in the profit-sharing ratio will increase prices and vice versa.

G. Neutrality Conditions

Let us suppose that the system is in equilibrium and all endogenous and exogenous variables measured in nominal units are multiplied by a scalar and the system is evaluated after the multiplication. If the multiplication of all the nominal variables by a scalar leaves the equilibrium values unaltered, then it is said that the system is neutral because each equation supposedly involves dollar-free units.

When all the nominal variables like wage rate, stock of money, stock of mudarabas etc. are divided by another nominal variable such as price level, then the model portrays relations among real magnitudes only, because then doubling or tripling of the nominal magnitudes cannot influence the equilibrium values of those variables. All the nominal magnitudes in the model represented by equations (5.1) through (5.7) have been divided by another nominal magnitude; and hence the model meets the conditions of neutrality.

H. Dichotomy Conditions

A system is dichotomous if changes in the growth rate of money do not affect the equilibrium values of the real variables even though changes in growth

rate of money may affect the equilibrium values of dollar-denominated magnitudes.

The system obtained and analyzed above by assuming $C_1\pi(M+\Phi)/p^z=0$ meets the conditions for dichotomy because changes in the growth rate of money lead to corresponding changes in the growth rate only of the price level without affecting any real variable.

I. Stability Conditions

Suppose that whenever there is a surplus or a shortage in the commodity market, the price level adjusts and whenever a discrepancy exists between supply and demand for the real balances, the profit-sharing ratio adjusts to bring the system to an equilibrium. That is, at an instant s, it is necessary that:

(5.61)
$$dp/ds = \sigma \left[\left\{ C(Y_D, k\Theta - \pi) + I(\eta - 1) + G + \delta K \right\} - F(K, L) \right]$$

where
$$\sigma' > 0$$
, $\sigma(0) = 0$

and

(5.62)
$$dk/ds = \beta[m(k, Y) - (M/p)]$$

where
$$\beta' > 0$$
, $\beta(0) = 0$

According to Taylor's theorem, an arbitrary function, F(x), for which the value of the function at $x = x_0$ and the values of derivatives of the function at $x = x_0$, $F'(x_0)$, $F''(x_0)$, . . ., etc. are known, can be expanded around the initial value x_0 as follows [Chiang, 1974, 270]:

(5.63)
$$F(x) = \{\{F(x_0)/0!\} + \{F'(x_0)/1!\} (x - x_0) + \dots + \{F^n(x_0)/n!\} (x - x_0)^n + R_n\}$$

where Rn denotes a remainder.

Imagine Taylor's expansion of the functions (5.61) and (5.62), and focus attention on the first order part of the Taylor expansion of the functions around equilibrium values of the variables, to obtain:

$$(5.64) dp/ds = \sigma' H(k - k_0)$$

and

(5.65)
$$dk/ds = \beta' m_k (k - k_0) + \beta' (M/p^2) (p - p_0)$$

where p_0 and k_0 are the original equilibrium level of prices and the profit-sharing ratio.

Equations (5.64) and (5.65) form a first order linear differential system of the form:

$$(5.67) dx/ds = Ax$$

where A is the matrix of coefficients and x is the vector of endogenous variables. The system (5.67) will be stable if the eigenvalues of the characteristic equation

$$(5.67) A - \lambda I = 0$$

have negative real parts.

The corresponding characteristic equation for the system given by equations (5.64) and (5.65) is:

$$(5.68) \qquad \lambda^z - \beta' m_k \lambda - \sigma' \beta' (M/p^z) H = 0$$

For the eigenvalues to possess negative real parts, the coefficient of $\lambda = -\beta' m_k$, and the constant term $= -\sigma' \beta' (M/p^2) H$ both must be positive. Thus necessary and sufficient conditions for the system to be stable are:

$$(5.69)$$
 $\beta' m_k < 0$

and

(5.70)
$$\sigma'\beta'(M/p^2)H < 0$$

Since σ' , β' , and M/p^2 are all positive, the system will be stable if:

$$(5.71)$$
 $m_k < 0$

and

Therefore the system is stable if the profit-sharing ratio is inversely related to the demand for money and to aggregate demand in the economy.

V. Policy Analysis: Second Scenario

In section four, attention was focused on analysis of the interest-free model when $(M + \Phi) = 0$. In this section, the model is analyzed assuming that $(M + \Phi)$ is non-zero.

Equilibrium values of wage rate, employment, and output are still determined by equations (5.1) through (5.3). But now equations (5.4) through (5.7) together determine the equilibrium values of consumption, investment, profit-sharing ratio, and price level, because dp is allowed to influence consumption and consequently aggregate demand. Since the growth rate of prices is determined by the growth rate in the stock of money, it is expected that the growth rate in money will affect the real variables such as consumption, investment, and the profit-sharing ratio. The equality between aggregate demand and aggregate supply is ensured by adjustment of both prices and the profit-sharing ratio in the appropriate directions.

Substitution of equations (5.11) and (5.12) into equation (5.13) and simplification by assuming $d\Theta$, $d\delta$ and dK to be zero, yield the following relation:

(5.73)
$$-C_1 dT + H dk - (I/\Theta) \{H + \Theta C_1 (M + \Phi)/p\} d\pi + dG$$

$$+ \{(M + \Phi)/p\} C_1 \pi (dp/p) = 0$$

Substitution of dp/p from equation (5.60) into the equation (5.73) yields:

(5.74)
$$Jdk = C_1 dT - dG + (I/\Theta) \{H + \Theta C_1 (M + \Phi)/p\} d\pi$$
$$- (I/M) \{(M + \Phi)/p\} C_1 \pi dM$$

where

(5.75)
$$J = H - m_k \{ (M + \Phi)/M \} C_1 \pi$$

J represents responsiveness of aggregate demand to variations in the profit-sharing ratio, and it is required that J must be negative for the system to be stable.

Assuming that J is negative, equation (5.74) dictates the following relations:

$$(5.76) \qquad \partial k/\partial G = (-1/J) > 0$$

$$(5.77) \partial k/\partial T = (C_1/J) < 0$$

(5.78)
$$\partial k/\partial M = - (I/M) \{ (M + \Phi)/p \} C_1 \pi/J > 0$$

Therefore an increase in government spending and a fall in taxation will lead to an increase in the profit-sharing ratio. An increase in government expenditures tends to increase the profit-sharing ratio as demonstrated in section IV, part A. An increase in the profit-sharing ratio causes the price level to rise through equation (5.7). A rise in the price level reduces real value of outstanding mudarabas and money, and also, for a given value of anticipated inflation, reduces the rate of real capital loss on assets. Consequently, expected real disposable income increases, which increases the desired rate of consumption, this in turn drives up the profit-sharing ratio still further. A similar explanation holds for the response of the profit-sharing ratio to an increase in taxes.

Change in the profit-sharing ratio in response to a change in the stock of money however will be dictated by the values of $(M + \Phi)$ and π . If $(M + \Phi)$ and/or π are positive then an increase in the money supply will lead to a higher profit-sharing ratio. If either $(M + \Phi)$ or π is negative, however, then an increase in the money supply will lower the profit-sharing ratio.

The system is still neutral because all the dollar-denominated variables have been divided by other dollar-denominated variables. The system is not dichotomous because changes in the growth rate of money supply do affect equilibrium values of the real variables by influencing the equilibrium values of the price level and the profit-sharing ratio.

VI. Summary

All seven equations contained in the complete interest-free model developed in chapter 4 are differentiated with the help of differential calculus to obtain a linearized system of equations. The linearization was necessary to work out the changes induced by fiscal and monetary policies in an interest-free economy.

The linear system obtained happens to be a block recursive system. A system is block recursive if it is decomposable into various independent subsystems or blocks. It is possible to detach the blocks and solve them independently of the rest of the system. The system obtained in this chapter

consists of seven equations. First two equations form an independent subsystem. Another independent subsystem is formed by the first three equations taken together. The rest of the four equations represent another independent subsystem which is further decomposable into two blocks provided that the sum of the money supply and of outstanding mudarabas equals zero. The system is analyzed under both scenarios, when the sum of the money supply and mudarabas is zero and when their sum is non-zero.

The block consisting of the first three equations leads to the conclusion that increases in capital stock will increase the real wage rate, employment, and income in the economy. But it is assumed during the policy analysis that capital stock remains fixed.

Three of the remaining four equations determine equilibrium values of real consumption, real net investment, and the profit-sharing ratio, when the sum of money supply and mudarabas equals zero. The fourth equation determines the prive level, as dictated by the growth rate in the money supply, independently of the rest of the system, to maintain equilibrium between aggregate output and aggregate demand in the economy. It is also concluded, in this case, that an increse in government spending raises the profit-sharing ratio for capital and reduces both consumption and investment. When taxes are increased, the profit-sharing ratio declines and investment soars, while consumption goes down. The profit-sharing ratio also rises proportionately with inflation.

In the second scenario, where the sum of money supply and outstanding mudarabas do not add up to zero, the equilibrium values of prices, profit-sharing ratio, consumption, and investment are determined simultaneously. Changes in the growth rate of the money supply induce changes in consumption by changing price levels in the economy. Increases in government spending and decreases in taxation increase the profit-sharing ratio and push down both consumption and investment.

When the stability of the interest-free system is investigated it is found to be stable. Determination of the profit-sharing ratio is investigated by using the Keynesian leakages-injections approach and the Classical loanable funds approach. The loanable funds market, however, is replaced by the mudaraba funds market, an equivalent of the loanable funds market in the Islamic system. This analysis confirms the conclusions drawn above regarding the monetary and fiscal effects on the profit-sharing ratio. It is discovered that the slope of the saving function must be less than a positive number for the system to be stable. It could be zero or even negative. It indicates that savings need not have a positive relationship with the profit-sharing ratio or, for the Western system, with the interest rate. The system will be stable even when savings are insensitive to the interest rate.

Chapter Six

Islamic Finance and Economic Development

In interest-based economies, nominal rates of return for financial assets during inflation commonly rise at some buoyant rate but real rates of return either rise less rapidly or fall. Since capital finance is sensitive to rates of return, it is found that nominal finance takes a high growth path and real finance a low one. In other words, finance in the real sense is shallow because the prevailing real rates of return during inflationary environment are so low, often negative, that holders of financial assets are not rewarded for real growth in their portfolios. [Shaw, 1973, 3]

The key issue is the real rate of return to the savers in the presence of inflation. It is argued that the low real rates of return cause economic stagnation in interest-based inflationary economies. It is demonstrated that savers and investors enjoy the intended real rate of return whether there is inflation or not in an interest-free economy. As inflation does not affect the real rates of return to the savers and the investors, it is likely that inflation will not affect the incentive to save and/or to invest thus the financial repression associated with the inflation pehnomenon will be absent from the interest-free economies.

The relationship between capital finance and economic development is outlined in section one. The inflation problem and its relation to fiscal and monetary policies in lagging economies is discussed in section two. The financial roles of the interest rate and the profit-sharing ratio are compared in section three, while the advantages of the interest-free financing system are demonstrated in section four. A summary of the discussion is given in the last section.

I. Finance and Economic Development

Theories underlying the role of money in the development process vary according to the view one takes towards the determination of the investment rate in lagging economies. In subsistence economies, savers and investors tend to be identical, and because there are no financial markets, private investment depends heavily on prior self-saving. Accelerating the pace of development

requires breaking out of the internal finance constraint.

Less is saved if the return is unattractive, as likely to be the case, if the only known use for savings is self-investment or lending in the very limited neighborhood market. Financial assets are scarce and illiquid in this environment and many potentially high-yielding investments are never made for lack of funds which flow into less productive investment.

Those individual economic units endowed with entrepreneural talents and drive do not generally have surplus resources to invest in other enterprises. What matters crucially from the point of view of the development process is the existence of channels through which the resources of units with surplus capital are transmitted to units with greater profit potential and in greatest need of those resources. [Gurley and Shaw]. In the absence of such channels economic growth fails to reach optimum rates because savings either remain sterile and/or are misallocated. It is in establishing such a channel, and in improving its efficiency, that monetary policy comes into its own.

In the early stages of economic development, intersectoral flows take place through direct lending. That is to say, surplus from savers in one sector are lent directly on the basis of close contacts with investors in other sectors. No finanical paper, as such, is used in mediating these transactions. As the economy expands, personal contacts tend to loose this closeness, and informal, direct forms of lending and borrowing are substituted more and more by indirect forms involving the use of money. Replacement of direct lending by bank intermediation raises the ratio of money to national income, which implies a release of real resources. It follows that in such a context money creation itself is the channel of transferring surplus savings to investing sectors. The real resources freed in this way reflect the real quantity of money willingly held by the public.

The saving units or sectors accumulate financial claims on the investing (borrowing) units or on financial intermediaries which then transmit the funds so mobilized to the investing units. Over time these modes of lending lead to an ever growing ratio of financial assets of all kinds to income and wealth with a concomitant rise in saving and investment ratios. Savers and investors (borrowers), who hitherto had been scattered and isolated from each other, are joined together by various kinds of credit instruments and financial institutions.

Issues of monetary and financial policy are thus thrown into sharper focus. If the development of the economy is to be accelereated, it is essential that the resources saved by surplus sectors be put to the most productive uses and that the amount of such surpluses be increased. This requires the provision of more attractive financial assets for surplus units as a repository of transferrable savings. Policies should be designed to supply the financial instruments needed to transfer assets of the surplus sectors to sectors with

a demand for them. For instance, the practice of interest is prohibited for Muslims and the demand for interest-based financial assets is minimal. Interest-free financial assets must be provided to surplus units in Muslim economies.

In the early stages of development, when the economy is poorly equipped for financial intermediation, money is most sought after as a repository of wealth. As credit markets become better organized, the range of assets for holding savings is widened to include bonds, shares, etc. A desire for a variegated pattern of financial assets is motivated by such factors as risk aversion of savers in addition to their transaction and liquidity needs. [Minsky] Hence, financial assets other than money need to be created if savings are to be fully mobilized for financing investment.

The objective, however, is not simply to increase aggregate savings, but also enlarge the amount of transferrable savings. This can be achieved by altering the structure of savings of the surplus spending units, the great majority of which are in the household sector in developing countries. A large part of the savings of the units in the household sector is generally invested in physical assets such as goods or gold which contribute little or nothing to economic growth. Even much of the savings invested in business enterprises is wasted (i.e. yield a lower return than it could) because fragmented or non-existent financial markets force savers to invest excessively in their own activities. There is a compelling need for the ratio of financial assets to total savings of the household sector to grow as fast as possible.

Economic growth, based on increased productive capability, requires more and better equipment as well as a more skilled labor force, which will not materialize unless resources are made available for these purposes. On the other hand, all the resources in the world will contribute nothing to economic growth if they are not used productively. [Coats and Khatkhate]

Economic agents possessing inferior investment opportunities lend their resources to those who envisage superior investment opportunities in the financial markets. The transfer takes place on the basis of interest rates in interest-based economies and profit-sharing ratios in interest-free economies. Claims to returns on the real assets can be broken down into small units so that even the small asset holders can benefit by diversifying across real asset holdings. Moreover, asset holders can alter the level of risk by, for instance, selling some high-risk securities in exchange for low-risk securities. Financial assets in general stand as a vital link at the very centre of the development process.

In sum, the advantages of financial markets are greater diversification of portfolios, the possibility of alterations in risk levels, and the transfer of resources from savers to investors, all of which permit increased investment opportunities and higher levels of economic development.

II. Inflation and Development

In the decade of the seventies, almost all of the countries in the non-communist world experienced high and intractable inflation, which persisted even in the face of economic recession. When inflation is very high and variable, then fiscal policy usually results in very large budget deficits, which can be financed only by issuing money and by creating credit backed by interest-burdened debt owed unwillingly by the taxpayers.

Developing countries appear to be much more prone to very severe inflation partly because tax evasion in these countries often leads to significant government budget deficits. Government budget deficits in developing countries are sometimes equal to as much as 20 percent of the GNP, which are far larger than the deficit/GNP ratios in developed countries. The shallowness of the financial system in these countries makes it more likely that a given government budget deficit will be financed with inflationary monetary expansion rather than by non-inflationary debt issue.

Monetization of large deficits results in nominal money growth far in excess of real growth and, consequently, high inflation. Because money does not pay interest, the real return to money declines and the desired real money to income ratio falls. If the ratio of the fiscal deficit to GNP is held constant, the decline in the real money-income ratio results in higher inflation, which feeds back into yet further declines in the real return to money, in the money-income ratio, and yet higher inflation.

In hyperinflation, increased inflation leads to a decline in the real rate of return on broadly defined money and therefore to a decrease in the level of desired real money balances. As asset holders "sell" or unload money to buy relatively attractive goods with real value, monetary velocity increases, which in turn causes the rate of inflation to accelerate. With each successive increase in the rate of inflation, the desired money balances decline, velocity increases, and inflation increases. Even though the quantity of goods and services which the government must purchase through deficit financing may remain constant, a dynamic process takes place in which inflation accelerates in an explosive fashion.

In the highly inflationary countries of Latin America, where inflation is severe and chronic and the stabilization problem has proven to be most resistant to constructive policy measures, inflation has been on the order of 20-30 percent at the low end of the range to 1,000 percent at the high end. The explosive inflation process has been the thorny problem haunting the decision-makers in most developing countries since the stagflation of 1974-75.

A. Monetary Fund Stabilization Strategy

Inflation is assumed by the International Monetary Fund (IMF) to result from an excess of aggregate demand over aggregate supply. IMF policy calls for reduction in aggregate demand by restricting the growth of money and credit, increasing the cost of credit by raising interest rates, and reducing government spending.

For the IMF, domestic credit is the principal determinant of aggregate demand, and stabilization policies associated with IMF standbys have always attempted to manage demand by controlling the gorwth of domestic bank credit. Because bank credit is one side of a bank balance sheet, which has as its other side bank money, controlling bank credit tends to be synonymous with controlling bank money.

The IMF found it necessary to recommend restrictive demand management policies, which would reduce domestic money balances, reduce the demand for imports, and make domestic goods available for exports. This would follow a sharp devaluation which would bring domestic prices in line with the rest of the world prices and decrease inflation to a level where domestic goods would not be priced out of world markets.

B. McKinnon-Shaw Critique

It is argued that the deflationary measures adopted by the IMF result in contraction of output while failing to reduce inflation. Tools of orthodox policy include credit ceilings, increased reserve requirements, and credit restrictions that reduce aggregate supply. Though these same policies reduce aggregate demand, this deflation in demand is insufficient, relative to the decline in aggregate supply. Such policies, in the words of McKinnon, "cause the aggregate supply of goods and services to fall faster than the fall in aggregate demand and thus frustrate attempts to stabilize the price level" [McKinnon, 1973, 87].

The essential common elements of the McKinnon-Shaw thesis can be briefly outlined as follows: Savings are positively related to the real rate of interest and the income level. There is an administratively determined nominal interest rate which holds the real interest rate below the equilibrium real rate of interest. This limits actual investment to the amount of saving forthcoming at the fixed real interest rate. In this situation non-price rationing of investible funds takes place giving preference to low-yield traditional investments that are safest and simplest to finance. Moreover interest rate ceilings discourage risk-taking by the financial institutions because they cannot charge a risk premium and hence a large proportion of potential investors drop out of the

economy or keep their assets in foreign countries.

Increase in the real rate of interest winnows out some low-yield investments that were financed before. Hence the average efficiency of investment increases. The income level also rises and savings are increased. Thus the real rate of interest is the key to higher levels of savings and efficient investment.

The McKinnon-Shaw approach distinguishes between nominal and real aggregates of money and credit. Though it calls for some reduction in the rate of growth of nominal money and credit, it, at the same time, recommends an expansion in real money and credit.

If interest rates are raised under highly inflationary conditions from deeply negative to positive real levels, it is argued that there will be an increase in the demand for real money balances. Such increase in real money balances and shift in the income velocity of money will act to reduce the rate of inflation above and beyond that attributable to reducing the rate of growth of nominal money. At the same time, real credit aggregates will expand as real money expands.

Proponents of this view argue that such an increase in real credit will act to stimulate rather than reduce real economic activity so that reductions in the rate of inflation will be accompanied by an expansion rather than a contraction in income, output and employment.

This view toward stabilization policy was first employed in Taiwan in the 1950s and Korea and Indonesia in the 1960s. In Korea, where McKinnon and Shaw acted as advisers under the sponsorship of the United States Agency for International Development (USAID), Korean authorities, faced with high inflation and declining real money balances, instituted a major banking reform. The key to this reform was a major increase in interest rates on time deposits of short maturities. Overall, bank interest rates on both deposits and loans were raised to positive real levels. In the years that ensued, inflation declined, the real size of the banking system expanded dramatically, and economic growth accelerated. [Long and Veneroso]

III. Financing Mechanisms

In an interest-based economy, the transfer of resources from savers to investors (borrowers) takes place through financial securities, such as bonds. The investors pledge interest payment to the lenders at the time they borrow resources, hoping to recover the interest payment by putting the real assets into more remunerative projects. The interest rate is a mechanism that ensures a quantitative equality, in the aggregate, between lending and borrowing. [Radcliffe]

In an interest-free system, the transfer of resources takes place through

mudarabas negotiated on the basis of profit-sharing ratios between the savers (i.e. those who invest in mudarabas) and the investors or entrepreneurs, (i.e. those who use the savers' assets in productive enterprises) rather than interest rates. Consequently equality between aggregate savings and aggregate investment is ensured by the profit-sharing mechanism rather than by the interest rate mechanism because profit-sharing ratios in interest-free economies serve the same purpose as interest rates in interest-based economies.

In the case of interest-based contracts between lenders and borrowers, interest payment to the lenders is guaranteed by the borrowers in money units without regard to actual profitability of the project in which the borrowed funds are employed. Therefore, in the absence of bankruptcies, all risk associated with the projects goes to the borrower's account. As the lenders do not share the risks associated with the projects, except in the rare case of bankruptcy, the interest-based contracts are considered "unjust" by Muslim economists.

A contract is considered "equitable" if both savers and investors agree to share the risk associated with the projects in which funds are employed. When contracts are negotiated through mudarabas the risk is automatically shared, in an ex post facto sense, between the savers and the investors in the agreed upon profit-sharing ratio.

The transfer of funds on the basis of mudarabas reflects the added advantage over bonds of equitable risk-sharing in addition to greater diversification, greater flexibility, and greater productivity.

IV. Islamic Finance, Inflation and Development

In an interest-based economy what matters to the savers and the borrowing investors is the real rate of interest, not the nominal rate of interest. The nominal rate of interest is the one observed and negotiated in the marketplace. It is commonly believed that the nominal rate of interest is equal to the real rate of interest plus the anticipated rate of inflation as propounded by Fisher. That is:

(6.1)
$$r = i + \pi$$

where r stands for nominal interest rate, i stands for real interest rate and π for anticipated rate of inflation.

The rationale for the Fisher equation is simple: Suppose that $\pi=0$ and r=4%. Under these circumstances, a lender granting a one year loan expects the proceeds of the loan to permit him to purchase 4 percent more of the quantity of goods and services when the loan is paid back.

Now imagine that the lender expects the rate of inflation to be 10 percent at an annual rate. In order for the lender to receive the real return of 4 percent, the nominal interest rate must be high enough to offset the expected 10% inflation rate plus 4 percent. In other words, if the interest rate happens to be 14 percent, 10 percentage points of that 14% will just offset the inflation that is expected between now and one year from now. The 4 percent over and above the inflation premium represents the real return.

To receive the same real return, in ex post sense, lenders must receive a nominal rate that exceeds the real rate by the amount of inflation that is expected, so that borrowers who were willing to pay 4 percent when inflation was zero now must be willing to pay 14 percent when inflation is 10 percent.

The Fisher equation would be an excellent guide if the actual inflation rate during the period of the contract happens to be equal to the expected rate of inflation so that savers are not hurt nor can investors obtain undue advantage. But it is highly unlikely that the expected and actual inflation rates will turn out to be the same. Generally, actual inflation turns out to be far ahead of the expected inflation due to unanticipated events.

Suppose that people expected 10 percent inflation during the period of the contract but actual inflation turns out to be 15 percent. In this case the savers aspiring to a 4 percent real interest deserve 19 percent nominal interest rate instead of 14 percent put in the contract. Due to the nature of the contract the savers receive a negative 1% real rate of interest rather than a positive 4 percent. This demonstrates the iniquity embedded in interest-based transactions.

The practice of interest appears "unjust" on both theoretical as well as practical grounds. It is impossible to predict unanticipated inflation and so the interest loss to savers cannot be offered at the time of the contract. Regarding the anticipated part of inflation, both the savers and investors need to agree on a common expected rate of inflation which is difficult to determine. Consequently financial assets do not remain attractive in interest-based economies. Asset holders feel better-off if they keep their real resources instead of exchanging them for financial assets. As explained in section two above, such reductions in the real rates of return are responsible for the shallowness of financial markets which leads to economic repression.

Suppose, in an interest-free economy, an entrepreneur seeks \$1,000 at a profit-sharing ratio of 60:40. The project is expected to yield \$100 of Islamic profits. In the absence of inflation, the entrepreneur will keep \$60 and pay \$40 to the financier. The \$40 paid to the financier represents the equivalent of a 4 percent nominal (= real) rate of return in an interest-based economy.

If there is a 15 percent inflation during the contract period, then how are the yields affected? As a result of this inflation the total revenues of the project would rise by 15 percent, ceteris paribus. If inputs, other than capital and entrepreneurship, are valued at the original real rates by increasing their returns by 15 percent, then Islamic profits will swell by 15 percent from \$100 to \$115, that are divided in the ratio 60:40 as stipulated in the contract between the entrepreneur and the financier. Consequently, the financier receives \$46 and the entrepreneur keeps \$69 out of the \$115 of Islamic profits. Notice that \$46 is exactly 15 percent higher than what the financier would have received in the absence of inflation and the \$69 in the entrepreneur's account is also exactly 15 percent higher than what he would have received in the absence of inflation. In other words, the financier receives the desired \$40 in real terms representing a 4 percent real rate of return. Inflation has not changed his real rates of return. Hence, ceteris paribus, interest-free contracts yield the real rates of return to both the entrepreneurs and the financiers desired at the time of the contract, regardless of inflation; whereas interest-based contracts distort the desired real rates of return in the face of inflation. In this sense, interest-free financing is equitable and interest-based financing inequitable.

More formally, the profit-share of a typical firm in an interest-free economy is represented by:

(6.2)
$$\xi_i = pY_i - wL_i - k[pY_i - wL_i]$$

Where $\xi_i = \text{profit-share of the ith firm}$

p = price level

w = market wage rate

Yi = real output produced by the ith firm

L; = labor hired by the ith firm

k = profit-sharing ratio in favor of the financier

Equation (6.2) can be re-written as:

(6.3)
$$\xi_i = (1 - k) (pY_i - wL_i)$$

Assuming that the real output and the amount of labor hired do not change, the profit-share of the firm over time can be represented by the total differential of equation (6.3):

(6.4)
$$d\xi_i/dt = [(\dot{p}/p)(pY_i) - (\dot{w}/w)(wL_i)]$$

Assuming that, to be equitable with the hired labor, the wages are increased to the extent of the inflation so that labor receives what was negotiated in real terms, the equation (6.4) reduces to:

(6.5)
$$d\xi_i/dt = (1 - k) [pY_i - wL_i] (\dot{p}/p)$$

The profit-share of the firm in an interest-free economy rises by the amount of the actual inflation. Similarly, the profit-share of the financier given by $k [pY_i - wL_i]$, also rises by the amount of actual inflation.

Notice that the conclusion holds irrespective of the nature of the inflation: demand-pull, cost-push, anticipated or unanticipated. The real rates of return to the entrepreneurs and the financiers are not affected by inflation in interest-free economies.

Because the real rates of return to savers are protected during inflation, inflation is unlikely to affect their decisions to hold financial assets. Therefore financial shallowness associated with inflation, anticipated or unanticipated, in an interest-based economy, will be absent from an interest-free economy. There is a compelling need for the countries plagued with inflation to switch from the interest-based financial system to an interest-free system.

V. Summary

This chapter discusses a critical issue faced by several developing nations in the third world. According to conventional wisdom, inflation in interest-bearing countries is the main villain of economic development. It is argued that generally the individuals with entrepreneural skills, drive and talents, are different from the savers, i.e. the individuals possessing surplus resources. Sound channels to transfer resources from savers to producers are necessary to maintain economic development. Resources are seriously misallocated in the absence of such channels. As the channels are provided by financial institutions, they have a double task to perform. These institutions must issue financial instruments that provide stimulus to the savers and must put their savings to the most productive use.

The interest-bearing financial instruments floated in the Muslim countries are not compatible with the economic philosophy ordained by Islam. This explains, at least partially, why all Muslim countries remain among the developing countries of the third world.

Almost all market-type economies have experienced a skyrocketing inflation since the last decade that has managed to persist even during recessions. Stagflation in the developing countries continues because, on the one hand, the financial systems of the countries are not sound enough to absorb

inflation. On the other hand, the authorities lack the wherewithal to collect taxes necessary to finance their fiscal budgets and, consequently, rely on inflationary finance. So the economic stagnation continues.

It is argued that the real rates of return on savings become very low or negative in an inflationary environment. Since savings are assumed to vary directly with the real rates of interest, the low real returns discourage savings needed for economic development. Therefore economic development requires that the real rates of return on savings must increase. An increase in the real rate of interest can be ensured either by increasing the nominal rate of interest on deposits or by controlling the inflation rate. The International Monetary Fund is in favor of controlling inflation by restraining domestic credit and consequently reducing effective demand. McKinnon, Shaw, and several other development economists do not approve the Monetary Fund strategy. They argue that cuts in domestic credit increase inflation because they reduce aggregate supply faster than aggregate demand. They propose an increase in the interest rates on deposits to a level that ensures a positive real rate of return to the savers.

The present study demonstrates that the savers and entrepreneurs will obtain the same real rates of return, they intended at the time of fund transfer if their contracts are concluded on the basis of interest-free Islamic principles even in the presence of inflation. Hence incentives to save are preserved in the face of inflation or deflation in the interest-free system, thereby leading to steady economic development. It is recommended that the inflation-ridden countries of Latin America should switch to the Islamic interest-free system because the interest-free system not only preserves economic development, but also ensures just returns to the contracting parties during inflation.

Chapter Seven

Western and Islamic Systems: Comparative Analysis

The practice of charging interest has remained controversial throughout history. Moral, civil and religious positions against interest were summarized in the first chapter. The institution of interest is rendered impotent in socialist societies because all the means of production including capital or ownership of machines are put under the state control. Another group of economists, Individualists, blame interest for interrupting free competition by creating a quasi-monopoly. They favor a legal ban on interest to promote perfect competition. Islamic economics presents a new alternative to interest, the profit-share.

Capital is rewarded by interest in the Western system whereas reward for capital in an Islamic system is a share of profits. Interest refers to the income return on debt capital. In an interest-bearing system many firms finance their purchases of capital goods by borrowing funds, paying interest to lenders on the debt they acquire. People can lend funds to business firms directly by purchasing corporate bonds or indirectly by depositing funds in any of a number of financial institutions which in turn make loans.

Profit refers to the income return on equity capital. Equity capital represents ownership claims on businesses. Profit income is earned by entrepreneurs who own part or all of their business outright or by those who own part or all of the business through shares of stock. In an Islamic economy, debt capital is practically converted into equity capital by means of mudaraba arrangements. So the traditional lenders become financiers and thereby business partners, all joined cooperatively through common ownership.

Issues relating to interest along with its Islamic alternative, profit-share, are discussed under appropriate headings in section one of this chapter to facilitate comprehension and comparison of the interest-free system with the interest-bearing one. The role of interest and its Islamic substitute in the pursuit of major national economic goals, including full employment, efficient allocation of resources, and equitable distribution of resources, is spelled out in section two. The discussion is summarized in the final section along with concluding remarks.

I. Rewarding Capital

Economists have advanced several theories to rationalize returns to capital. Traditionally accumulation of resources is called "saving" while the utilization of capital is called "investment". Several theories are advanced by both savings and investment advocates to justify interest on capital. In addition, Keynes maintains that interest represents a liquidity premium and a monopoly charge on scarce capital.

A. Savings Related Views

Accumulation of capital (savings), must take place prior to investment. It is argued by Nassau W. Senior, founder of the Abstinence Theory, that while laborers are at work, they must be fed and clothed. Therefore there must be already in existence a supply of necessities accumulated for this purpose, the result of previous saving, or at any rate of non-consumption. And this saving, it is contented, must be rewarded by interest, otherwise it will not take place, and society will suffer through a shortage of capital.

But critics refute this theory. It is argued that the savers may be divided into three classes for analytical purpose: high income, moderate income, and low income. People in the high income class *must* save because they cannot, by any possibility, consume all their resources. Saving by the rich class invovles no abstinence, so abolition of interest would not affect this kind of savings.

People with moderate incomes could possibly consume all their income but they do save part of it. Why do they save, even though present desires are generally more vivid and urgent than future ones? They make an immediate sacrifice, it is argued, for the sake of an ultimate gain, such as the ability to meet contingencies. Members of this class save because, by postponing consumption, they anticipate a gain in utility. The gain in utility is sufficient to induce them to save without any additional stimulus in the way of interest.

People in the low income class probably cannot afford to save at all. If they save they probably sacrifice to do so, although their savings may be trivial.

Admittedly, some people may be so situated that they will not save unless their savings are rewarded by interest. Some economists seem to believe that without the savings of this group, society would not have the amount of capital that it needs. Since it is impossible to distinguish the various types of savers, all savers must receive interest whether they require it as a stimulus or not.

How important are the savings of interest-sensitive persons? An empirical answer to the question lies in the interest elasticity of savings. Results of empirical studies, however, are inconclusive, suggesting that the existence or

non-existence of this group of people cannot be proved.

The real issue regarding savings by these persons is whether their savings bring a reward. Under normal economic conditions such savings will be rewarded in an Islamic society in the form of a profit-share. Therefore savings by this group will continue even after the interest-bearing system is replaced by the Islamic interest-free mechanism.

Assuming the tripartite class structure of saving is valid, what would happen if the practice of interest were abandoned? If the savers did not save, they would consume. Their consumption would lead to increased aggregate demand and, in turn, increased output supply. The increased output would transfer "savings" to the other two classes. Therefore, although savings of this class would disappear, this might be made good by increased savings amongst the other classes.

All muslim economies, until recently, practiced interest-bearing banking. The Qur'an has prohibited dealings on the basis of interest. Those who practice interest are given "notice of war from God and His Apostle." (Baraqa: 279) But the dominance of Western practices and a failure to recognize a viable alternative to interest-based transactions forced pragmatic and needy Muslims to carry on their financial business with the interest-bearing banks.

Others rejected interest-based practices and therefore resorted to "hoarding". Paradoxically, Muslims are not allowed to hoard because hoarding of hoarders will be "tied to their necks like a twisted collar to inflict pain and anguish in the hereafter" (Al-i-Imran: 180). Hence the Muslims faced dilemmas of choice between the two evils. Either hoard or practice interest until a genuine alternative becomes available.

This situation divided Muslims into three groups: those who actively participated in the interest-based transactions, those who reluctantly dealt with the interest-charging banks, and those who stayed away from the practice of charging interest. These attitudes are probably responsible for the accumulation of huge idle balances in the Muslim world. According to some estimates in 1983, \$80 billion were sitting idle in Muslim countries. [Wohler-Scharf, 1983, 76]

Keynes rejected the view that interest is the regulator of savings, that savings increase or decrease as interest-rates rise and fall, and that the rate of interest is fixed by the demand for capital compared with the supply of it. He maintains that people save even when they receive no interest—when, for instance, they place their money on deposit in a bank or when they hoard it in the form of cash.

On what does saving primarily depend? On two things: on the habitual thriftiness of individuals and communities and on the level of their income. Given fixed incomes, thrifty individuals and communities will save more than the unthrifty, and given fixed habits of thriftiness, the bigger the income enjoyed

by individuals and communities, the more saved.

The psychological theory, a variant of the abstinence theory, argues that a loan is merely an exchange of present wealth for future wealth. But since persons tend naturally to put a higher value on the present than on the future due to the technical superiority of present goods, the exchange would not be equal, unless the borrower paid back more nominal wealth than he received. It is pointed out that there is always an advantage in turning wealth into capital and consumer goods into producer goods, because producer goods increase output and create a surplus. But the making of producer goods takes time. Therefore there is an advantage in starting their manufacture as soon as possible. A lender could forego consumption and turn his liquid assets into machines. The borrower must compensate the lender for this loss of opportunity in the form of interest.

In the interest-free system the capital owner is rewarded not merely because it is possible to convert the consumer goods into producer goods over time. Either the capital owner must transform his power of consumption into producer goods himself and use the machine to realize its returns or he must agree to share actual consequences, profits as well as losses, of the activity with an active agent—an entrepreneur.

B. Investment Related Views

The proponents of the Use Theory and the Productivity Theory of capital claim that labor can produce more wealth with capital than without it. Use Theory states that interest is the payment made for the "use" of a borrowed tool or machine. The lender might have used it himself. He permits the borrower to use it. Therefore the borrower must pay for this permission.

The exponents of the productivity theory visualize capital as consisting of producer goods, which are "productive." It is only fair, they argue, that those who lend productive goods should receive a share of the extra wealth these goods produce. If it is pointed out that most interest-bearing loans take the form of a transfer of money, the reply is that this money can always be turned into producer goods and must therefore be regarded as their equivalent.

Tools and machines consist of inert matter. They can produce nothing until they are vitalised by labor. Neither labor nor capital can produce more wealth alone; they must be combined to produce more wealth. Therefore those who own their own labor and those who own machines or capital should share the fruits of their combined effort. Capital and labor are applied to those tasks that are deemed productive. It is claimed that borrowers agree to pay a fixed amount of interest because they expect either higher or at least the same rate of return from the borrowed capital.

Realization of expected results is a rare phenomenon. Virtually in all cases, the actual outcome turns out different from the expected one. Therefore in the interest free system rather than agreeing on a fixed rate of interest, the financier and the entrepreneur agree on a fixed profit-sharing ratio in which they share profits of the enterprise which after the productivity of both the capital and the labor services is determined. If the use of the capital and labor leads to losses, the losses must be shared between the financier and the entrepreneur. The entrepreneur loses the rewards expected for his entrepreneurship and the financier loses his capital up to the extent of financial loss. If the business breaks even, the entrepreneur still loses a return to his entrepreneurship while the financier is entitled to his capital. In this case, returns to ownership of capital are nil.

The foregoing discussion indicates that mere permission to use capital does not qualify it for positive rewards in the interest-free system. Therefore the Use Theory of capital does not apply. The claim regarding productivity of capital is admitted in the interest-free system but reward to capital in the interest-free system is not permitted in advance on the basis of expected productivity. In reality productivity of capital may change in response to changes in several factors including population, tastes, living standards, and monetary and fiscal policies during the contract period. The effects of all relevant changes are taken into account in the interest-free system because actual returns are based on the actual productivity of the capital rather than on its expected productivity.

Notice that the relationship between savings and actual investment in an enterprise is a curious one. These two factors are independent of each other. Savings depend on the thriftiness and income level of a community. Investment depends on something quite different—the decisions of entrepreneurs or businessmen to produce or buy goods. These decisions in turn depend on the view taken by entrepreneurs of the prospects of making a profit. If the prospects seem good, businessmen will produce or buy. Otherwise, they will sit tight. Therefore savings do not, of itself, provoke investment. Society can save as much capital as it likes. Unless entrepreneurs think they can make profits by using it, they will not invest it.

Suppose a community saves more than the entrepreneurs choose to invest. What happens to the surplus capital? The people who saved will have reduced their consumption on consumer goods. This is what saving generally means. The consumer goods industries will have to idle or turn out some of their workers. These unemployed men will have to subsist partly at least on their small savings. This dissaving will eat up capital and balance the surplus saved by the other people. Dissaving will work against saving until all the surplus capital is gone and the community has just the amount of capital that it can use—that is, that its entrepreneurs will invest. Therefore the additional saving

melts away through unemployment.

If, however, the entrepreneurs had decided to invest the additional capital, there would have been no unemployment or only temporary unemployment, because the boom in the producer goods industries would have balanced any dullness in the consumer goods industries.

C. Liquidity Premium View

In the absence of interest, Keynes pointed out, savers will not lend and hoarding will take place in the form of cash. Cash has certain advantages over capital invested in securities and other instruments. Cash is a most liquid legal tender. It can be used at once to pay debts or to make purchases. Securities, on the other hand, first have to be sold. This causes delay, and when the securities are sold they may not fetch their original price. During a commercial crisis, when there is a famine of ready money and an insatiable demand for cash, securities may even prove utterly unsaleable, and their owners may be driven into bankruptcy. Some inducement therefore is necessary to make a man invest his money—that is, turn his cash into securities. The inducement is the payment of interest. According to Keynes, interest is a liquidity premium.

Hoarding is harmful to a community. Hoarding in the form of cash withdraws currency from circulation and causes a shortage of the medium of exchange. Money which is hoarded is not spent. Producers find themselves short of orders and are left with stock on their hands. Economic activity slows down and unemployment is created. It is evident that special measures must be taken to prevent hoarding.

Critics contend that the savers may not choose to hoard in the absence of interest because hoarding carries costs. Hoarding in the form of commodities deteriorates rapidly. Food rots, clothing becomes motheaten, iron rusts, wood warps, animals die, buildings crumble into ruin, and machines get out of repair. Wealth cannot be kept intact while hoarded. It can only be kept in existence by extra costs, called carrying costs.

What if the saver hoards wealth in the form of cash. This does not mean that carrying costs are not incurred. It only means that they are not incurred by the saver. The cash he hoards is only representative wealth. Somewhere the real wealth which his cash represents is being looked at by someone. The hoarder gets a service for which he makes no payment, another reason for taking measures to prevent hoarding.

In an interest-bearing system, the creditor gets back his wealth intact, with its value undiminished. This means that the debtor has borne the carrying costs. And, in addition, he pays interest, so the creditor is doubly paid.

Exponents of the interest-free system partly condemn the interest-bearing system because it represents a highly developed form of hoarding. It is argued that the difference between primitive hoarding and present banking is this: When people buried their cash under the mattresses, their treasures ran the risk of deterioration and loss. Not so in the interest-bearing system. There is no risk in a good bank, and the value seldom decreases. The second difference is that the depositor in a bank goes on getting interest even though his money may not be employed in any productive process. The result is that from the social point of view modern banking is worse than primitive hoarding because it rewards the modern hoarders with a fixed rate of interest. So the hoarders, who are responsible for unemployment, are the people who go on amassing wealth.

Hoarding through financial institutions is not possible in the interest-free society because depositors in the interest-free system are transformed into risk-capital investors who are entitled to profit-share out of actual profits rather than interest. Not only is hoarding categorically condemned by the Qur'an as stated above, it is also practically checked through the zakat levy, a religious tax at the rate of 2.5 percent per annum on liquid assets.

D. Monopoly Charge View

Keynes explained that interest, apart from being a liquidity premium, is charged by the capital owner because capital is scarce, just as rent is charged by the land owner because land is scarce. In other words, interest is a scarcity or monopoly charge. The owner of a relatively scarce article, the capitalist takes advantage of the purchaser's needs to charge a non-competitive price.

The non-competitive situation, monopoly, originally springs from the inequality of income and wealth. If interest were merely a liquidity premium, it could hardly exist outside of monetary economies. But history reveals it as a familiar phenomenon in the earliest natural economies where exchange proceeded by barter.

II. National Economic Goals

Every nation would like to achieve all of its major economic goals including equitable distribution of income and wealth, full employment, and rapid economic growth through efficient allocation of resources. Interest has a bearing on each of these national goals.

A. Equitable Distribution

Interest is both a cause and an effect of maldistribution of income and wealth. The primary cause of interest is simply the unequal distribution of wealth, the concentration of capital in a few hands. The practice of interest, in turn, makes concentration and inequality go far beyond what could possibly have taken place in a truly competitive economy. To begin with, the concentration of capital and inequality were probably due in part to uneconomic causes-to war, conquest, and natural calamities. But afterwards, they were maintained and accentuated by monopoly practices like unscrupulous profiteering and the taking of interest. Whenever a broad gulf opens out between the rich and the poor in any community, interest makes its appearance. The rich man has superfluous commodities which the poor man needs, either to relieve his immediate wants or as raw materials for his work. But he cannot pay for them on the spot. Therefore, he buys them on credit, and the seller takes advantage of the purchaser's impecuniosity to charge an extortionate price. Interest subordinates the more productive economic agents, the entrepreneurs, to the less productive financiers and results in making the poor indebted to the rich. This is the essence of all interest-bearing loans, even when, at a later date, the wealth lent is transferred not in kind but in money. The principal of a loan is the competitive price of the commodities transferred (or of the commodities which the borrower buys with the money advanced); the interest is the extra charge imposed by the seller on credit.

It is appropriate to recall from chapter six the injustice done by interest during inflation and deflation. During inflationary periods, part and sometimes all, of the rewards of the lender are appropriated by borrowers, and the returns of the borrowers are siphoned off by the lenders during deflation. This situation is ameliorated in the interest-free system.

B. Full Employment

Interest not only makes the business cycles worse, leading to increased instability, it is also a cause of chronic unemployment. If the rate of profit, measured by marginal product of investment, is lower than the rate of interest, the entrepreneur will cease to produce. If he has to borrow, he cannot afford to pay interest at a higher rate than he is making profit. If he is working with his own capital, it will pay him to cease production for a low rate of profit and lend out his capital at a high rate of interest. Up to a certain point every additional dose of capital put into a business brings a higher rate of profit. After this point, the rate of profit diminishes with every additional dose. Now

if the current rate of interest is above the rate of profit, businessmen will not make further additions to investment. This is how the rate of interest holds up economic development. If the rate of interest falls, however, the community will invest more until the marginal productivity of investment matches the new lower rate of interest. If the rate of interest were zero, businessmen might have invested much more. This means that the community could have saved far more capital than is actually invested, but owing to the rate of interest, the entrepreneurs cannot avail themselves of it. And to keep down the community's savings to just the amount which the entrepreneurs can invest, a certain level of unemployment must be permanently maintained.

According to Keynes, interest is both good and bad. It is good so far as it discourages hoarding. It is very bad so far as it discourages investment and creates unemployment. In fact it makes full employment a sheer impossibility.

Quite a substantial part of bank assets is diverted to unproductive channels. Banks invest in government securities, advance money for purposes of speculation, and cash bills of exchange. None of these is a productive process. The institution of interest provides banks with unproductive channels to employ their capital, so that capital which should have been available for productive purposes becomes scarce. The scarcity of capital raises the rate of interest. The increase in the rate of interest only accentuates the vicious influence of interest. More purchasing power is diverted to banks and more bank assets are diverted to liquid and unproductive channels.

If there were no interest, the result would be that the purchasing power of the people would be either used in satisfying their desires or invested in industries or commerce, whether directly or through banks based on the principle of sharing the actual return from investments. The portion of purchasing power people would spend on their immediate needs would encourage production. The portion they would invest in commerce or industry would provide capital for further productive processes. Either way, production would be spurred and employment provided.

The readers might wish to review chapter six to recall how the interestbearing system increases unemployment and stagnates economic development in inflation-ridden economies.

Interest rates also accentuate trade cycles, the succession of booms and slumps, which are responsible for large scale unemployment, by creating material and psychological effects on individuals leading to changes in the desire to save and invest.

In the heyday of a boom, large amounts of money on interest are employed in productive processes. Due to the burden of interest the marginal cost of production no doubt rises, but as yet there is enough demand for goods and the producers feel highly optimistic about the future. Because the demand for goods is great, profits rise and are reinvested in the banking industry. Wages,

however, always lag behind. Interest has a bearing on this lag, because the entrepreneurs carrying the burden of interest are very reluctant to increase wages. Besides, a large number of laborers remain unemployed even during the nascent boom.

The great profits made during a boom create great optimism in the business world. The demand for capital increases and the rate of interest continues to rise. The businessmen with their short term vision go on contracting liabilities in spite of the rising costs of production. Simultaneously the demand for capital for speculative purposes also increases—again raising the rate of interest. The producers, however, continue to produce, although the margin of profit now starts contracting. Many producers see that in their overconfidence they have started ventures that do not promise to pay. The first signs of over-production become noticeable.

Eventually the banks, seeing that further demand on capital would be used for purposes that promise no return, desire to contract credit. The central bank generally raises the signal by increasing the rate of discount. The banks raise their rate of interest to a prohibitive level. They even try to withdraw their old loans, thus increasing unemployment on the one side and raising an alarm in the business world on the other. Prospective purchasers now prefer to postpone purchases until prices fall. This produces a lack of consumers. A lack of purchasers on the one hand and a withdrawal of loans on the other may make many unstable structures fall. The foregoing process has been clearly evidenced by the banking activities in the state of Texas.

What happens in a recession? As soon as the banks find that the companies will begin to incur losses or that their profits are going down, they reduce assistance and call back their loans. As a result some firms have to close down. Even for those that could possibly survive, unemployment increases, purchasing power goes down and there is further reduction in demand. Still other firms get into trouble and the infection spreads. Therefore interest intensifies the recession. Current problems in the farm belt in the United States reflect this phenomenon.

In the profit-sharing arrangement, it is in the interest of the banks to continue financing during a recession and to help the firms get out of the troubled times because the profit-share of the banks are tied to the fortunes and misfortunes of the firms. Recession is unlikely to worsen, because the interest related cyclical pressures are absent.

C. Efficient Allocation of Resources

It is agreed that savings among competing investment projects are allocated by interest rates, because savings are attracted by the projects that promise relatively higher returns and are able to pay higher interest rates. Relatively poor projects remain unattended. Therefore the interest rate mechanism promotes efficiency by allocating savings to the most profitable investments. Can you guarantee such efficient allocation of savings among various projects in an interest-free economy?

Efficiency of capital is maximized under the Islamic interest-free system because the interest-free banks are forced to attract clients on the basis of the rate of profit already achieved by them in recent years and in the light of their future profit projections. Funds will be handed over to those firms that are likely to pay the highest possible profit-share, rather than interest rate, for the available funds.

If capital markets are perfectly competitive and the environment is certain and static then interest can be said to perform the allocative function in strict accordance with the marginal productively of different projects. In reality, there exist a number of market imperfections and the environment is dynamic, which greatly detracts from the importance of interest as an allocator of scarce resources.

For instance, the rationale of allocation in an interest-bearing system is the ability to provide collateral and not the soundness of the project under consideration. In allocating funds, banks secure their finances by demanding collateral. Only those firms with adequate assets for use in guaranteeing the loan can obtain finance.

In the interest-free system, banks are partners in the firm, so they do not need or rely as heavily on collateral. The allocation of capital is likely to take place on the basis of the expected profitability of the proposed projects. Therefore the allocation function is better performed in the profit-sharing system than in the interest-bearing system.

III. Summary and Concluding Remarks

Summing up, interest as an economic institution is open to the following objections:

- Interest is not the recompense of labor, because the wealth which it represents is created by the debtor, not by the creditor.
- 2) Interest is not the reward of sacrifice, because the creditor lends superfluous wealth, which he does not wish to consume, and which he cannot or will not use himself directly in the production of more wealth.

If it is maintained that the creditor renders a service to the debtor by permitting him to use his wealth, then this service is more than outweighed by the service which the debtor renders to the creditor by keeping his wealth

intact for him. If it is alleged that interest encourages saving and thereby promotes economic welfare, it can be replied that this has never been satisfactorily proven.

 On the contrary, if the Keynesian theory is true, then interest discourages production, curtails saving, and creates chronic unemployment; and

4) Interest is the result of a monopoly, not a natural monopoly like land, because capital can be indefinitely multiplied, but an artificial monopoly due to the human laws and customs which have concentrated ownership of capital in a relatively small number of hands.

On all these counts then interest stands convicted. It violates the right of private property; it impedes the working of free competition; it retards economic progress; and it helps to perpetuate and aggravate the conditions of monopoly and inequality out of which it sprang. It follows then that the abolition of interest is an essential preliminary to establishment of a just society.

A prerequisite for the abolition of interest is the establishment of interestfree structures designed to ameliorate the economic ills associated with the practice of interest. Islam offers its profit-sharing system to generate maximum employment, promote equity, improve efficiency, and stimulate economic development.

Profit-sharing ratios in favor of the financier are ideal substitute for interestrates. Variations in profit-sharing ratios, rather than in interest rates, are critical for the allocation of resources and for overall economic activity and economic stability. Analysis of practical experience in manipulating profit-sharing ratios as part of asset management in interest-free countries such as Iran, Sudan and Pakistan is at least as important as analysis of debt management and interest rates in Western economies.

Further research and expansion of the interest-free model are possible. Data needed to test the interest-free macroeconomic model are not yet available because Iran, Pakistan and the Sudan have only recently adopted the interest-free system. The model may be tested as the data become available in the future.

As a reflection of the urgent need and pressure to try new approaches, an interest-free system has been introduced alongside the interest-based system in several countries of the world. The interest-free model can be modified for application in economies characterized by a dual financial system. The model developed in this study is for a closed economy, but it can and should be expanded into an open-economy model.

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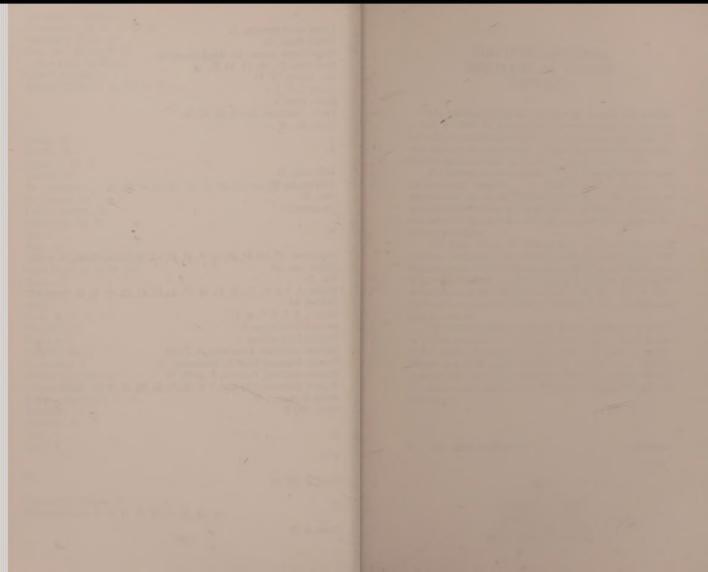
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ABOUT THIS BOOK

General equilibrium macroeconomic models are considered essential for evaluating the impact of monetary and fiscal policies in an economy. This aspect has not received, until now, significant attention. This present work, by Dr. Muhammad Anwar, develops general equilibrium models of income determination suitable for interest-free economies.

It can be used to understand several implications of making a transition from the conventional financial system to an interest-free financial system. There are numerous Muslim countries seeking to adopt the new interest-free system. These countries may find it useful to utilize the insights gained from such study to facilitate the establishment of an Islamic interest-free financial system.

The economic model offered in this book also shows clearly and scientifically that if the interest-based financial system is replaced by the interest-free financial system, then the real rates of return for savers and investors in the economy will be preserved during inflationary and deflationary periods. On the other hand, financial repression results when savers are badly hurt during inflationary periods in an interest-bearing economy. This study demonstrates that the inflation-ridden developing countries would be definitely better off if they adopt the interest-free financial system in place of the prevalent interest-bearing system.

This pioneering work is a new addition to the library of I conomics and an important aid to economic planners and students of I conomics.